MAY 29, 1961

PAPER TRADE JOURNAL

1960's Cost-Price Squeeze Effect On the Corrugated Box Industry

Lighter Papers Part Of Coating's Trends? Asks Coating Conferee

Engineering & Building Celgar's Earthquake-Proof Kraft Pulp Mill

First Quarter Sales & Earnings, Were They Unnecessarily Down?

Contents of the Week, pages 4-5

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Paper sculpture by Giuseppe Baggi

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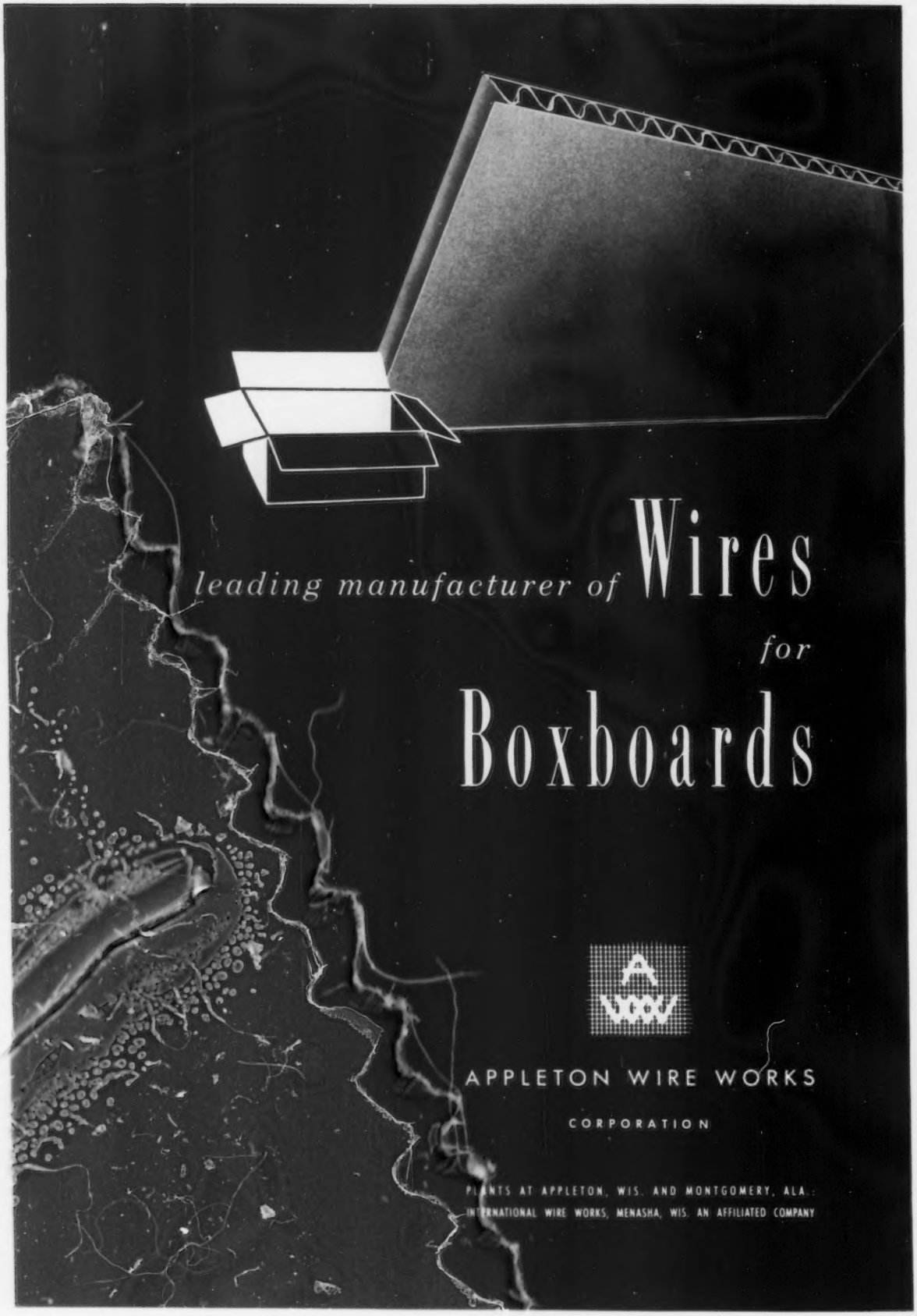
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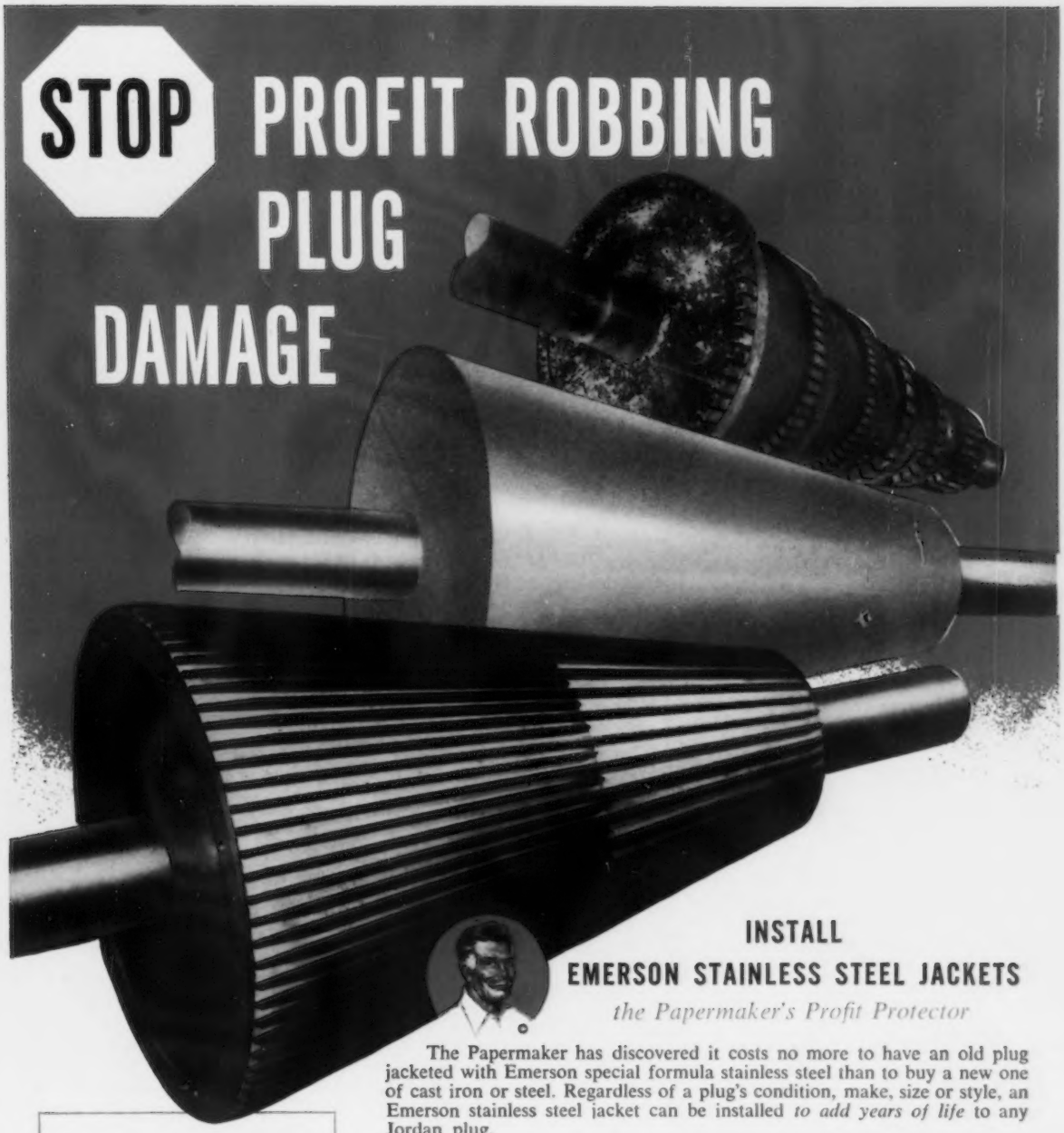

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PAPER TRADE JOURNAL

PUBLISHED WEEKLY SINCE 1872

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Week of May 29, 1961
Vol. 145, No. 22

FEATURED THIS WEEK

Competition Causes Trend Toward New Coatings, New Methods

New developments in this field are: Quick-set coating latex ✓ Lighter weight papers ✓ Precast clay coating ✓ Multi-purpose resin emulsion ✓ PVA as coating adhesive—Paul D. Van Derveer **20**

How the Corrugated Box Industry Operated in 1960 and . . .

What happened in the cost-price squeeze in this segment of our industry. Excess capacity and intense competition have resulted in declining prices in face of rising costs—Alvin A. Newburg **26**

How the Celgar Mill was Engineered and Built

Last week we presented a detailed article describing the 300 ton per day bleached kraft market pulp mill of Celgar Ltd. near Castlegar, B. C. Here we give details on site selection, designing and actual construction. **28**

Paper Industry Profit Picture Parallels National Economy

Profits for our industry hit bottom—at least we hope it was bottom—in the first quarter. Yet earnings were down to an unnecessary degree said some industry leaders while calling for sounder marketing practices—John W. Saunders **34**

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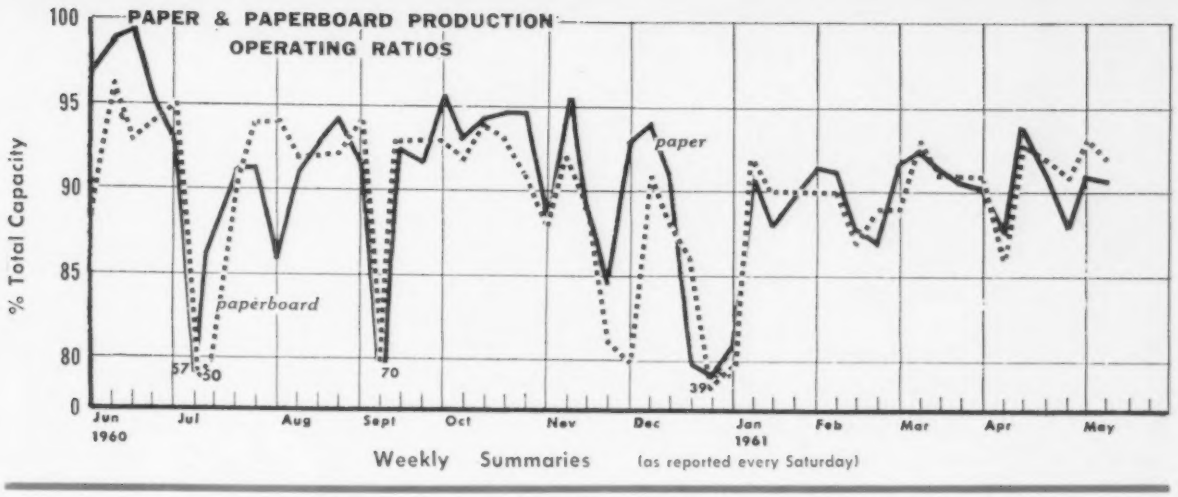

NEWS OF THE WEEK

Consolidated W P & P erecting office building at Stevens Point . . . IP Reaffirms Stand To Distribute Through Merchants . . . MacMillan, Bloedell May Build Mill in Australia . . . Sorg Products Buys Tri-State Litho Art . . . . . .

Sonoco Products Elects Vice Presidents . . . Forsgren Joins Nichols In Managerial Post . . . IP Names Oetkin Asst. Mgr. at Corinth . . . Champion Promotes Four To Key Positions . . . K-C Announces Reorganization Changes . . . . . .

Rotag to Open New Plant . . . Hermetite Acquired by Universal Match . . . D-N Announces Changes in Molded Packaging Div. . . . Paper Package Elects Grebe Vice President . . . Cupples-Hesse Co. Changes Name . . . . . .

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REMEMBER THESE DATES

Paper Industry Management Ass'n National Meeting, Robert Meyer Hotel, Jacksonville, Fla. — JUNE 7-9

Technical Section Canadian Pulp and Paper Ass'n Summer Conference, Saranac Inn, Saranac, N. Y. — JUNE 7-9

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FDA CLEARANCE. C2 is our trademark for sodium chlorite. The Food And Drug Administration has expressed the opinion that this chemical is not a food additive when used as a slimicide as it cannot reasonably be expected to become a component of food through this use.

See C2 work in your mill—call for a demonstration.

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CHEMICALS DIVISION **Olin**

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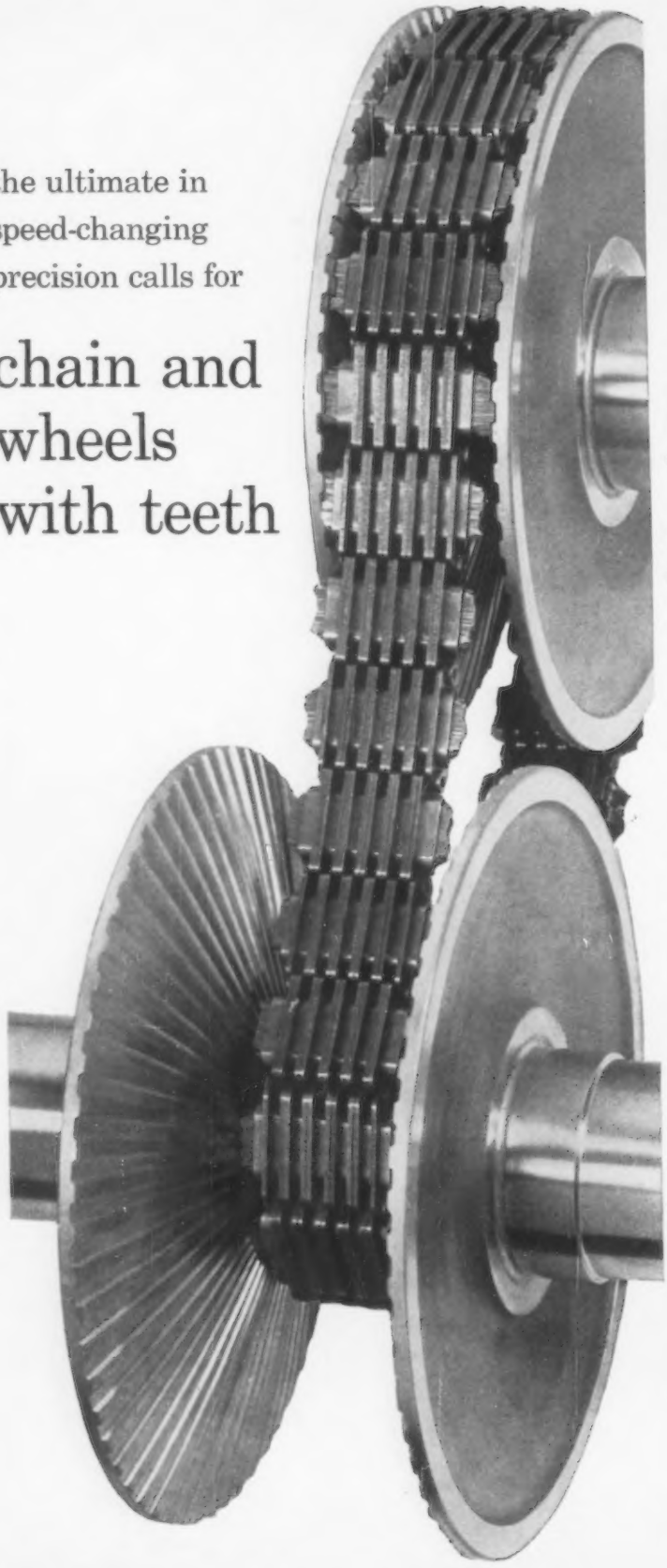
the ultimate in speed-changing precision calls for

chain and wheels with teeth



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Variable from maximum to minimum speeds—with no steps or stops in between—Link-Belt P.I.V. is the answer to speed-changing applications that won't tolerate slippage.

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A turn of the control screw changes the speed. The control screw simultaneously varies the effective diameters of the conically shaped wheels—closing one pair, spreading the other. This automatically, *instantly* adjusts the chain to provide a different output speed.

Contact your Link-Belt office or authorized distributor for more information about P.I.V. drives, ½ to 25 hp. Send for catalog.

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LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Warehouses, District Sales Offices and Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs; Switzerland, Geneva. Representatives Throughout the World. 15.659

Trends

Operating Rates Hold up to Mid-May

During the first half of May, paper mills ran 91+% of capacity and paperboard mills 92+%.

Pulp Imports Steady Overall

U. S. imports of wood pulp in the first quarter of this year ran behind the same period of 1960 excepting from Canada, which was ahead 8%. Total imports were up +0.2% due to the Canadian rise. The following data from the Census Bureau are labeled "Preliminary."

	First Quarter 1961	First Quarter 1960	Per Cent Change
Canada	522,018	484,341	+ 8
Sweden	40,825	64,555	−37
Norway	2,429	8,114	−70
Finland	19,381	27,679	−30
Total Europe	62,697	100,369	−38
Total World	588,106	586,862	+ 0.2

April Newsprint Output Nearly Even

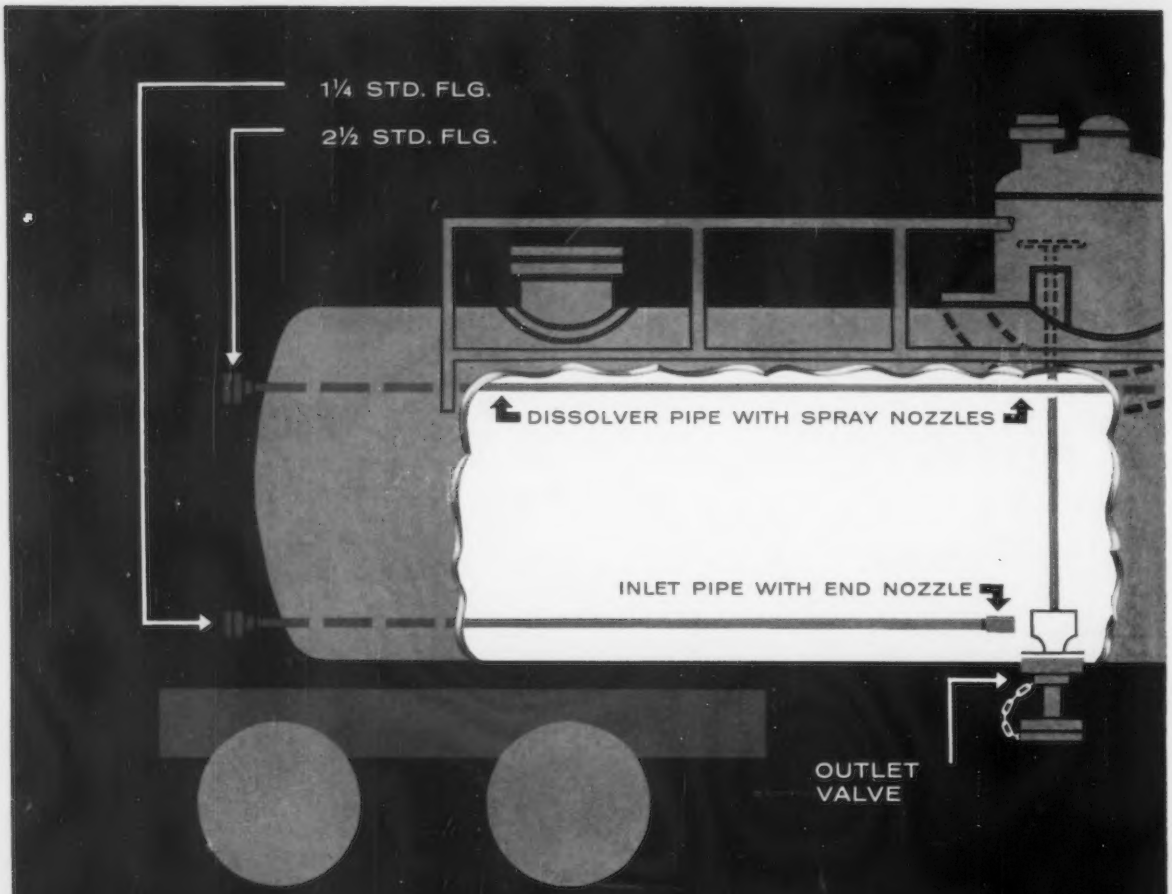
Production of newsprint in North America during April 1961 was 0.5% below that in April 1960. According to the Newsprint Service Bureau, output in the United States in comparison with April 1960 showed a loss of 3.5%. Canadian production was 0.4% above the April 1960 level. Newsprint output in North America in the first four months of 1961 was 0.5% above the level attained in 1960. Output of United States mills through the end of April 1961 was 2.8% more than the volume produced in 1960. Canadian production was 0.2% below that in the first four months of 1960.

Most Basic Prices off from a Year Ago

Recent Bureau of Labor Price Indexes for the first quarter of this year show the following interesting comparisons with the same period in 1960: wood pulp, −4.5%; waste paper, −29%; paper, +1%; paperboard, −4%; and building paper and board, −1%.

Folding Boxes Show Gain in April

For the second month in a row, shipments of folding cartons have moved upward according to the Folding Paper Box Ass'n. Dollar volume of shipments during April was less than 1% under the same month last year and tonnage was down 2.7%. Total dollar volume for the first four months of 1961 trails the same period of last year by 4.3% and tonnage is off 4.7%. New orders booked in April were up 6.6% from a year ago, bringing the cumulative total of new orders to within 2.3% of orders booked during the first four months of 1960.



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You can unload these 40- and 50-ton Hooker tank cars of sodium chlorate in about 90 minutes—roughly 2½ hours faster than before. You save that much on supervisory and labor costs as well as important time.

How the system works

1. Free the outlet valve with hot water pumped through the lower inlet pipe.
2. Pump hot water through the bottom outlet to approximately fill the tank.
3. The chlorate slurry thus formed is drained from the bottom outlet.
4. Hot water is then pumped through the upper dissolver pipe until all of the chlorate is completely dissolved.

Result: you cut unloading time by 65%.

Only Hooker tank cars give you this uniquely designed "fast-flow" feature. It will pay you to check Hooker technical service on all phases of handling, storing, and using sodium chlorate. For further details, ask for Bulletin 99, "Handling Sodium Chlorate."

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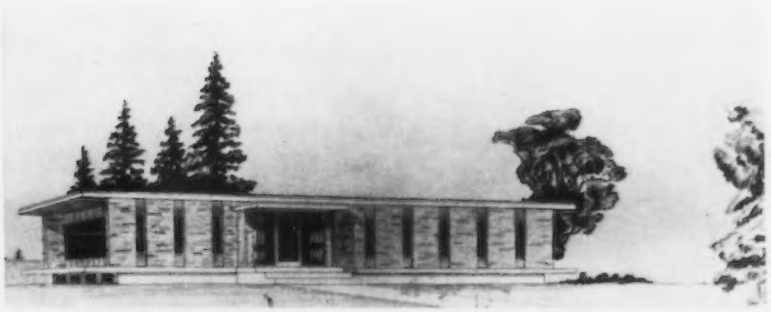
PAPER TRADE JOURNAL

WEEK OF MAY 29, 1961



UNDER CONSTRUCTION at the Wisconsin River Division of Consolidated Water Power & Paper Co. in Stevens Point is a new office building shown here in an artist's sketch. The concrete and stone structure will measure 57 by 33 feet and is part of an expansion program which will increase the company's enamel printing paper capacity to over 300,000 tons annually. A 432-foot building is being erected at left of the office site for a new enamel paper machine. Drawing by Ed Laskowski of the firm's Engineering Department.

Nonagenarian are we . . .

so, pardon us if we expand our chest a bit and send birthday greetings to us . . . for this begins PAPER TRADE JOURNAL's 90th year of continuous service to you in the industry.

International Paper Reaffirms Stand To Distribute Through Merchants

International Paper Co. has strongly reaffirmed its long-standing policy of distributing its complete line of fine and industrial papers through independent paper merchants.

The policy statement was made by Lamar M. Fearing, new president of International Paper.

"The absolute essentiality of the independent paper merchant is beyond dispute," Mr. Fearing told a meeting of the Merchants' Advisory Council of International Paper's Fine Paper Division. "The sale and distribution of printing, writing and industrial paper comes down simply to the business of having paper available where it is needed when it is needed. This, coupled with the fact that independent paper merchants also represent the mill on non-stocking items, makes these independent merchants so important."

Mr. Fearing said that I-P is "firmly convinced that the best outlet for this distribution is the independent paper merchant or chain of independently owned paper merchants whose roots and interest are deep in the communities they serve and whose sole interest is in serving the customers of these products, and not producing them."

Noting recent acquisitions of merchant houses by some paper mills, Mr. Fearing continued: "It has been, is and will be I-P policy to sell its mill brand and allied grades of printing, writing and industrial papers through independent merchants."

MacMillan, Bloedel May Build Mill in Australia

MacMillan Bloedel & Powell River, Ltd., is exploring the possibility of building a pulp and paper mill in Australia.

The mill would produce linerboard and coarse paper products with an annual capacity of 62,500 tons and would be built in conjunction with Australian associates and timberland owners.

Cost of the proposed mill was not announced, but it is understood to be between $25 million and $35 million.

Sorg Products Buys Tri-State Litho Art

Purchase of Tri-State Litho Art, Inc., of Sturgis, Mich., by the Sorg Products Co., a subsidiary of the Sorg Paper Co., Middleton, Ohio., has been announced.

C. J. Tranter, president of Sorg Products, said this is the third acquisition for his division. Others have been the Groff division in St. Paul, Minn., and the Royal Imprints division in Lewisburg, Pa.

Tri-State, in business since 1942, makes place mats, menu covers, tray covers, doilies, coasters and related products.

Paper and Paperboard Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending May 13, 1961, at 90.6 per cent, compared with 91.7 per cent, revised, for the preceding week. The ratio was 98.5 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paperboard production ratio for the week ending May 13, 1961, at 92 per cent, compared with 93 per cent for the preceding week and 94 per cent for the corresponding week a year ago.

(Detailed Statistics on page 45)

PAPER PEOPLE

C. W. Coker, Jr.

P. C. Coggeshall

Sonoco Products Elects Vice Presidents

C. W. Coker, president of Sonoco Products Co., announced the following management changes after a recent meeting of the board.

Named to the board as a director to fill the unexpired term of the late J. L. Coker was C. W. Coker, Jr. Three new vice presidents were elected—C. W. Coker, Jr., administration; P. C. Coggeshall, administration; R. B. White, production.

C. W. Coker, Jr., joined Sonoco in January 1958 with the standards department. In August 1959 he was named as assistant to the vice president. He is a graduate of Princeton University and received his M.A. from Harvard School of Business.

Mr. Coggeshall was graduated from the University of South Carolina in 1936 and from the Harvard School of Business in 1938. He joined Sonoco in 1939 as assistant to the vice president and shortly thereafter was made assistant purchasing agent. In 1946 he was named general purchasing agent and assumed the duties of director of purchasing in 1953.

R. B. White

Mr. White joined Sonoco in 1928. He was the first supervisor of the standards department. In 1944 he was promoted to superintendent of the cone department and in 1946 was made superintendent of the paper mill. In 1955 he was named production manager. He is a graduate of Clemson College.

Forsgren Joins Nichols In Managerial Post

Karl E. Forsgren has been named manager of plant operations, research and development for the Nichols Paper Co. The firm makes protective packaging products. It is a subsidiary of Strubel Paper Co., Green Bay, Wis.

Mr. Forsgren formerly was associated with Kimberly-Clark Corp.

IP Names Oetkin Asst. Mgr. at Corinth

Albert Oetkin has been named assistant manager of International Paper Co.'s Hudson River mill at Corinth, N. Y.

Mr. Oetkin replaces Judson Hannigan who was named manager of the mill earlier this year on the retirement of O. B. Beyer.

Mr. Oetkin, a native of New York City, graduated from Rensellaer Polytechnic Institute in 1948 following service in the U. S. Army. He joined International Paper at the company's research laboratory in Glens Falls, N. Y., the same year and was transferred in 1953 to the Hudson River mill as assistant technical superintendent.

Mr. Oetkin was named technical superintendent in 1958 and two years later became assistant to the general superintendent which position he held until his present appointment.

Champion Promotes Four To Key Positions

Promotion of four men to key positions at the Champion Paper and Fibre Co.'s Pasadena, Texas, plant has been announced by A. M. Koury, Texas division manager.

Harry M. Burnette, former assistant manager of the mechanical and power department, was named manager of the mechanical and power department.

Odell K. Sanders was promoted to the position of assistant production manager. He had formerly served as manager of paper manufacturing.

James S. Witt will fill the position of manager of paper manufacturing. He was formerly assistant manager.

John E. Schermerhorn was named assistant manager of paper manufacturing to replace Mr. Witt in that position. Mr. Schermerhorn was formerly a special assistant in paper manufacturing.

K-C Announces Reorganization Changes

Reorganization changes at the Niagara Falls plant of the Kimberly-Clark Corp. have been announced by J. C. Simonich, mill manager. Changes in production supervision should be completed by July 1, he said.

Thomas Howe, manager of the crepe wadding mill at Fullerton, Calif., will become new manager of operations at Niagara Falls over both No. 1 and No. 2 mills.

Clark Hook, production superintendent, will be transferred to the position of labor relations supervisor in the personnel division at Neenah, Wis. He will be replaced in the No. 1 mill by Frank Loppnow, who was assistant director, printing, paper manufacture at the Neenah home office.

Superintendent of No. 2 mill will be Carl Swiston, of Memphis Hill, where he was superintendent of crepe wadding manufacturing.

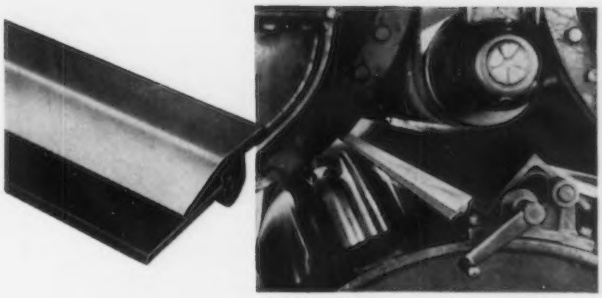
BIG RETURN ON A SMALL INVESTMENT

The RIGHT Doctor

Carefully Engineered To The Roll

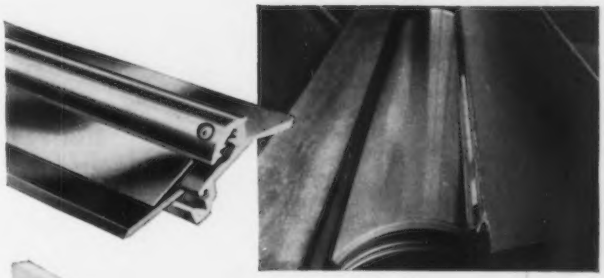
VICKERY RS DOCTORS

are skilfully designed to lock steel or fibre blades securely in place but to permit quick, easy blade removal and replacement even in close quarters. They combine the "live" flexibility and light but uniform pressure to keep the roll surfaces continuously clean, smooth and shining.



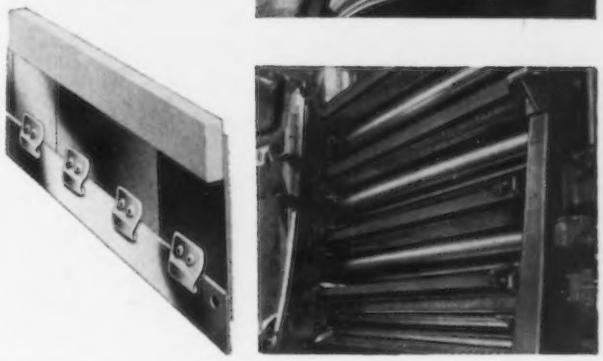
VICKERY HI-ANGLE DOCTORS

are engineered to assure high cleaning efficiency and water-tightness due to the steep angle between the blade and the roll. They are applied so as to provide just the right pressure over the full width of the roll without sagging, twisting or vibration.



VICKERY HI-FLEX DOCTORS

incorporate individual spring fingers for extreme radial flexibility. The blade follows every movement of the roll with exceedingly light pressure. Popularly applied to calender and super-calender rolls with an ultra thin blade so that friction is virtually eliminated.



Hydraulic or motor operated oscillating mechanisms are available when roll conditions warrant.

Vickery Doctor Air Lift Control provides instantaneous lifting of one doctor or all doctors on a stack at the touch of a lever on a conveniently located control panel.

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CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

E. J. Parry

M. P. Johnson

Finch, Pruyn Announces Staff Appointments

Finch, Pruyn & Co., Inc., paper manufacturer of Glens Falls, N. Y., has named E. John Parry public relations and communications manager; Myron P. Johnson, sales representative; and David C. Bidwell, sales promotion manager.

Mr. Parry, who will also serve as acting personnel director during the convalescence of Louis T. Valley, was formerly personnel director of a New York state paper mill. A native of Rome, N. Y., Mr. Parry was graduated in 1951 from Syracuse University with a B.S. degree.

Mr. Johnson, previously a factory representative in the laminated plastics field, received a B.S. degree from the University of Colorado in 1958.

Formerly on the staff of a large gift-wrapping manufacturer, Mr. Bidwell was born in Joliette, Quebec. He attended Dartmouth College and was graduated from Bryant College with a B.S. degree in 1958.

D. C. Bidwell

Con. Can Consolidating Mill Manufacturing And Board Sales Activities

In order to consolidate the paper mill manufacturing and board sales activities of Continental Can Co. into one operating division, an organizational realignment transfers operations of the company's boxboard plants in Haverhill, Mass., Middletown, Ohio, Natick, Mass., and Tonawanda, N. Y., from the Folding Carton and Drum Division into the newly named Paperboard and Kraft Paper Division. This division was formerly known as the Containerboard and Kraft Paper Division.

The change is being made to take full advantage of common technical and engineering skills as well as to coordinate board sales and manufacturing policies, according to C. B. Stauffacher, executive vice president of the Robert Gair Paper Products Group.

Charles M. McCarthy continues as general manager of paper and board manufacturing, overseeing the Thames River board operation and the four Southern mills in Augusta, Ga., Hodge, La., Hopewell, Va., and Port Wentworth, Ga.

William H. Caddoo becomes general manager of boxboard manufacturing, supervising manufacturing in the four Northern mills and providing technical services for the boxboard machines located in Folding Carton Division plants at Elkhart, Ind., Piermont, N. Y., and Los Angeles, Calif.

George E. Prokupek assumes the position of assistant to the general manager of boxboard manufacturing. George E. Tooker becomes manager of boxboard sales.

O. M. Miller has been appointed Folding Carton Division manager of manufacturing, supervising plants in Piermont, Elkhart and Chicago. R. D. Scribner will act as assistant to the division vice president and general manager, handling special assignments in the Central Region.

Great Northern Appoints New Project Engineer

Henry P. Gore has been appointed junior project engineer with the Research and Development Department of Great Northern Paper Co.

Mr. Gore received his B.S. degree in pulp and paper technology from the State University of New York, College of Forestry at Syracuse University. He will receive his M.S. degree in pulp and paper technology in June.

St. Croix Vice President Leaves Post

Kilby P. Osborne, vice president in charge of sales in New England for the St. Croix Paper Co., has retired as of May 1 because of ill health.

Westvaco Advances Two to Managerial Positions

Promotion of two staff employes at the Luke mill of West Virginia Pulp and Paper Co. to managerial positions with the company's Fine Papers Division has been announced.

Robert A. Powers was named manager of a newly formed Product Administration Department, and David Hopkins was named manager of warehousing and inventory.

In setting up the new organization, Chicago and New York sales administrative services groups and the warehousing and inventory unit at Luke were transferred to the new department under Mr. Powers' direction.

He also will be responsible for operation of the order departments at the four division mills located at Luke, Md., Mechanicville, N. Y., and Tyrone and Williamsburg, Pa., for all order and scheduling functions, attendant communications facilities and procedures, inventory and warehousing, and the administration of the grade mix program.

Mr. Hopkins, as manager of warehousing and inventory, will be responsible for administration of all present warehousing programs for the division as well as studying the possibility of future expansion.

Weyerhauser Names Executive Vice Presidents

Election of Howard W. Morgan, George H. Weyerhaeuser and J. E. Nolan as executive vice presidents of Weyerhaeuser Co. has been announced.

As the company's major operating executive in the pulp, paperboard and container group, Mr. Morgan has direct responsibility for the manufacture and sale of products accounting for approximately half of the company's business.

George Weyerhaeuser has a similar responsibility for the operation of the company's wood products and timberland group. Recently reorganized to include the manufacture and distribution of all wood products, the operations of this group also constitute approximately half of the company's business.

In his new capacity as the major staff and administrative executive, Mr. Nolan will direct and co-ordinate activities of the company's law, personnel, public affairs, secretary and controller, treasurer, general traffic and economist departments.

Daniel C. Smith of Tacoma, assistant general counsel, has been elected general counsel to succeed Mr. Nolan.

F. H. Osborne

Osborne Named Senior V-P At C. H. Dexter & Sons

C. H. Dexter & Sons, Inc., has elected Fay H. Osborne as senior vice president, according to a recent announcement by David L. Coffin, president. Mr. Osborne has been vice president and technical director of the company since 1935.

Another personnel change at the Windsor Locks, Conn., manufacturer of specialty papers and webs is that of George D. Knight who is acting technical director. Dr. Knight joined C. H. Dexter & Sons in 1948 and was named mill manager two years later. In 1958 Dr. Knight became vice president and plant manager, a posihe continues to hold.

Northwest Paper Transfers Sales Personnel

C. P. Sheldon, vice president and general sales manager, The Northwest Paper Co., has announced the transfer of Orlo F. Brower from the company's Minneapolis sales office to Chicago and Clinton J. Wainwright from Chicago to Minneapolis.

Western Paper Promotes Schaefer and Torgeson

C. S. Schaefer, president of Western Paper Converting Co., a subsidiary of Western Tablet & Stationery Co., is being transferred to Dayton, Ohio, where he will be director of sales for the parent concern.

Kenneth R. Torgeson, sales manager for the Salem plant, will succeed Mr. Schaefer as its president.

Paul Allemang, president of the parent organization, announced the two promotions recently from the head office at Dayton. He said that Mr. Schaefer would have headquarters in that city.

Due to the accelerated growth program at Itek Laboratories, and the opening of new facilities in Lexington, Mass., Itek has key positions available for

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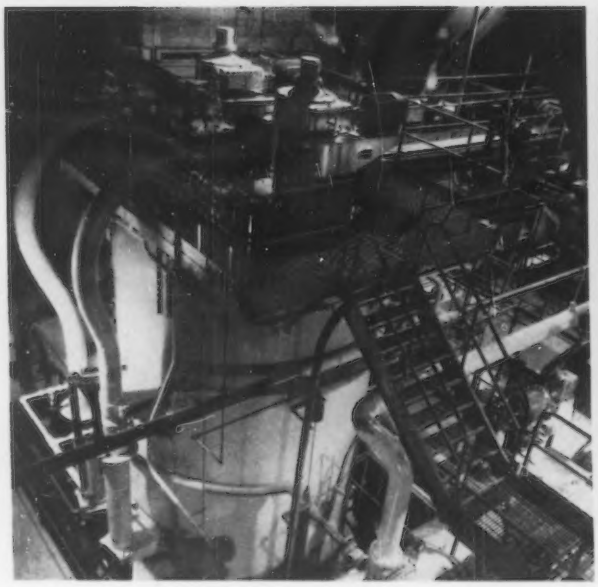
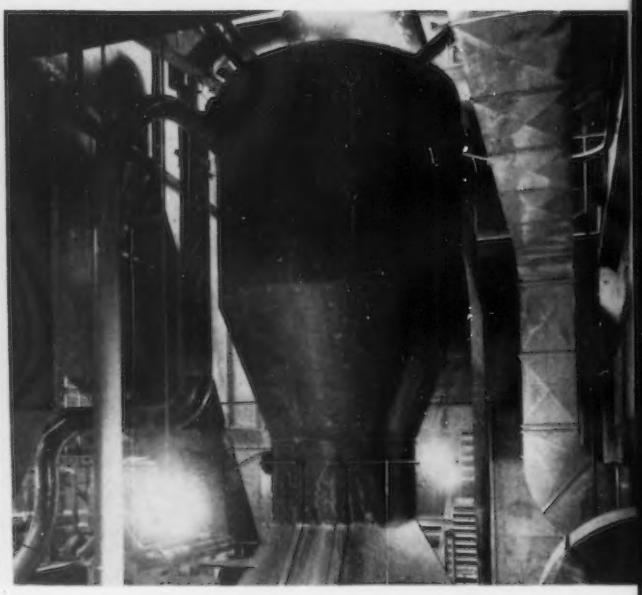


. . . in North America's largest fully proven Kamyr continuous digesters, then . . .



. . . the fibers are "cold-blown" to retain their maximum strength and . . .

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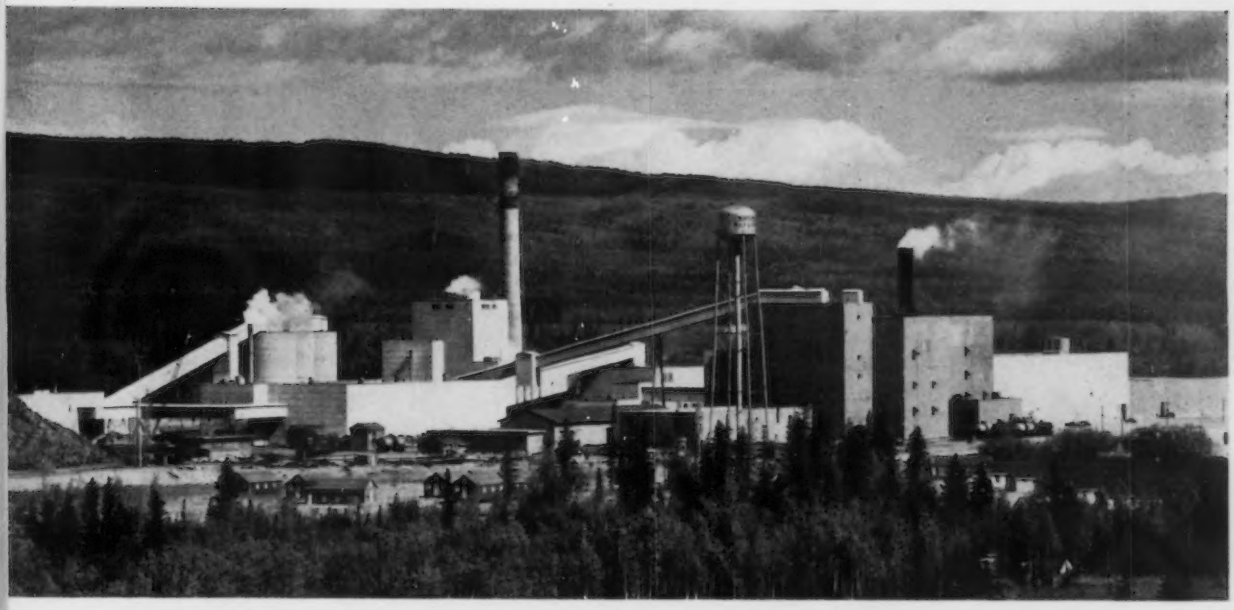
Now proved in over one hundred paper mills throughout North America, Alberta Hi-Brite Bleached Sulphate Pulp owes its success and versatility to many factors, including:

- Slow-growing softwood trees that produce long, thin fibers for superior bonding and forming properties.
- Huge Kamyr continuous digesters that closely control all the variables in pulp cooking and thereby assure a more uniform pulp.
- "Cold-blowing" of fibers as they leave the digester to safeguard their strength.
- Bleaching with the multistage Hinton sequence developed by St. Regis®, thus assuring pulp of maximum strength, brightness and cleanliness.



. . . go into one of the most up-to-date market pulp mills anywhere. Here chips are processed . . .

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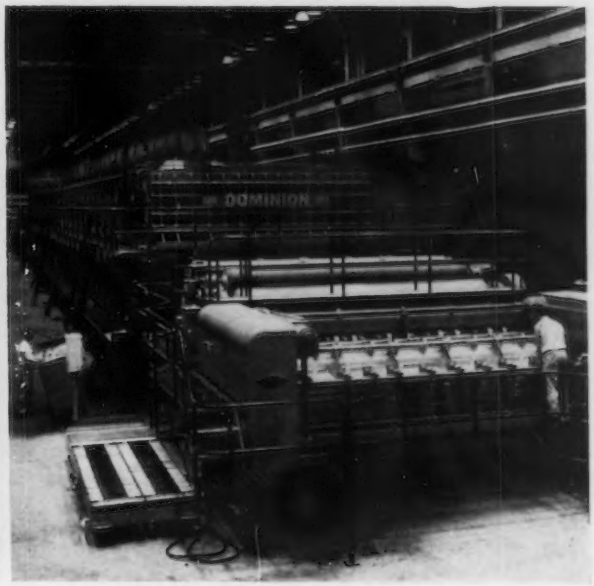

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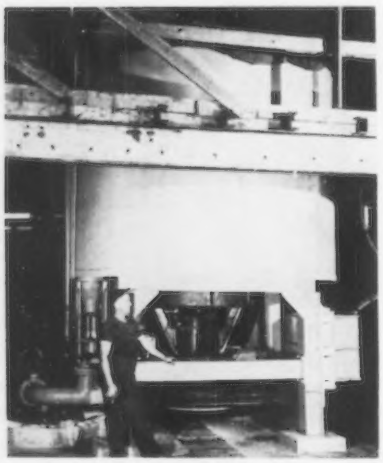
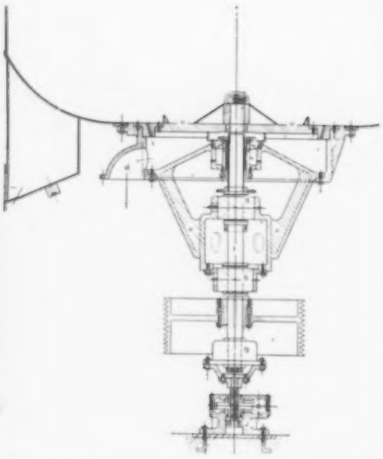
KRAFT DIVISION

St. Regis PAPER COMPANY

NEW EQUIPMENT & SUPPLIES





Pulper Simultaneously Cleans, Defibers and Pre-Refines

Noble & Woods' Extracta Pulper combines three vital stock preparation functions: pulping, defibering or refining, and fiber selecting into one unit. Controlled selective operations extract fibers from the pulp slurry at their exact moment of readiness for a specific use. Heart of the pulper is the steel or stainless steel rotor (a). Its replaceable extracting segments are alloyed cast iron, steel, or stainless steel. Tank (b) can be made of acid or alkaline resistant materials, with contoured bottom, and standardized sizes. Junk and dirt box (c) has perforated plate cover, can be provided with automatic junk valve. Micrometer adjusting mechanism (j) for rotor permits a broad range of primary refining action. Other parts include: discharge outlet (d) bearing support and bottom of discharge chamber (e) shaft (f) bearings (g), stuffing box (h) and V-belt drive (i).

The Extracta Pulper clears stock by accepting it through extracting segments whose small openings have closely controllable clearances. Heavy substances (paper clips, sand, metal, glass, etc.) are rejected, thrown to the outside and caught in the junk box. Wire string, etc. ball up and cannot pass through the extracting segments. They can be removed manually or automatically with an automatic ragging device. Stock is defibered by hydraulic attrition as it passes through the extracting segments. Extracting segments, adjustable for (1) fixed clearance and (2) by worm gear remote control, for variable clearance anywhere from 0 to $\frac{1}{8}$ inch, provide the pre-fining action.

The pulper is designed for easy bulk loading by hand or with fork trucks on conveyors. Noble & Wood Machine Co., Hoosick Falls, N. Y.

Acrylic-Modified PViC Emulsion for Decorative Coating

An acrylic-modified vinylidene-chloride emulsion, applied to paper or paperboard by standard coating methods, offers exceptionally good water, solvent, grease, scuff and block resistance, as well as water-vapor barrier, says its manufacturer, Rohm & Haas Co.

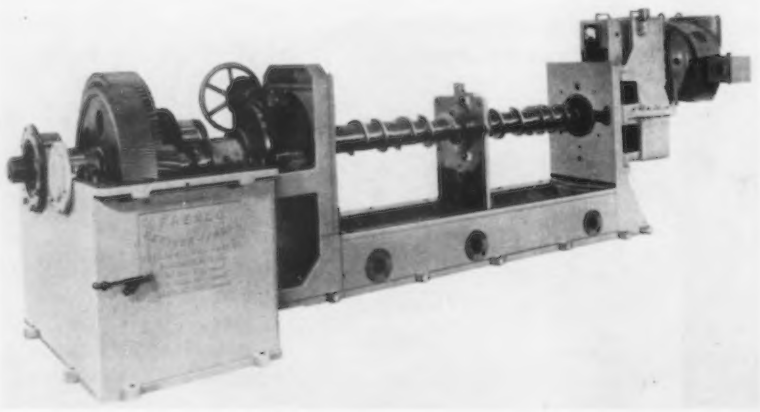
Paper and paperboard coated with Rhoplex R-9 should have a wide variety of decorative and functional applications. The coating of paper for food packaging is an important prospective use. The product, therefore, has been developed with F&DA requirements in mind. An application for F&DA approval is contemplated when typical end uses in food packaging have been established. The grease and water-vapor resistance of the film suggests such uses as clear or pigmented gloss coatings. Its abrasion and scrub resistance indicate practicability for multi-trip bottle carriers.

Conventional paper coating equipment, such as air knife coaters, roll coaters, trailing blade coaters, and spray systems, should be suitable for use in applying the films. Rhoplex R-9 is said to have relatively low foaming characteristics and to be compatible with a wide variety of pigment dispersions. Flow and covering properties are such that it often can be applied without modification in the coating plant. Rohm & Haas Co., Washington Square, Philadelphia 5, Pa.

Screw Press Enables Higher Headbox Freenesses

The intense pressure and fiber-to-fiber contact that takes place in the screw press, designed and built by the French Oil Mill Machinery. Co., is claimed to increase headbox freeness 20 to 25 percent in pulp processing operations, yet maintain desired sheet properties.

The French Screw Press is designed to express fluids from fibrous materials, defiber and shred whole wood chips and squeeze spent liquor from



Brighter whites with wet strength resins... acid stable Leucophor C is the first all-purpose optical brightener to produce maximum brightness in the beater and in the tub. Excellent stability over the entire pH range eliminates the need for buffers and enables you to re-use white water containing alum and free acid. With wet-strength resins, there's no precipitation, no yellowing of the paper. See the reverse side of this ad for additional information, and call Sandoz for a demonstration at your earliest convenience. Sandoz, Inc., 61-63 Van Dam Street, New York 13, N. Y. ALgonquin 5-1700. District Offices: Charlotte; Cincinnati; Fair Lawn, N. J.; Hudson, Mass.; Los Angeles; Philadelphia.

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- in spraying or dipping • in coating

In hard-sized papers and paper containing wet-strength resins, Leucophor C fully satisfies the need for high acid stability. In clay-casein coatings and size press solutions it has outstanding alkali stability. And with given amounts of TSP or soda ash, you can add large amounts of Leucophor C for added brightness without yellowing.

Designed especially for the paper industry, Leucophor C is another example of how Sandoz research and complete service to paper pays off in outstanding performance. Call Sandoz and see—

LEUCOPHOR C:
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- Widest pH range (1-12)
- Excellent stability with acids, alkali, salts, and hard water
- No precipitation, yellowing, or loss of brightness
- Permits sizing at low pH for maximum retention of fines and better uniformity
- Compatible with anionic and nonionic compounds, fillers and shading pigments, direct and acid dyes
- Stable in storage at temperatures between freezing and 110° F.

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EAR PROTECTORS, model 372-26K, integrates quickly and easily into most safety hats. Includes the fittings necessary to attach the domes to a cap. It has been tested and approved for use in harmful noise areas of pulpwood and other industries where a noise problem exists and a safety cap is required. Attenuation is kept at a high level. Communications model also available. David Clark Co., Inc., Worcester, Mass.

treated chips. With a barrel length of 77 inches, almost twice that of smaller units, the press is reported to attain up to 90 percent liquor recovery in a single pass.

The high recovery in a single press is possible because the 77-inch barrel makes it possible to add wash water in the middle and realize 2-stage pressing in one machine.

In addition, this two-stage processing operation racks up additional savings. The initial purchase price of the new French press is approximately 40 percent cheaper than the cost of two smaller units hooked up to a conveyor system.

Power drive on the French Press consists of a high speed feed worm drive available up to 125 h.p., and a slow speed main press shaft drive available up to 500 h.p. A patented adjustable motor mount permits changing of the two-speed press shaft drive in less than 30 minutes time.

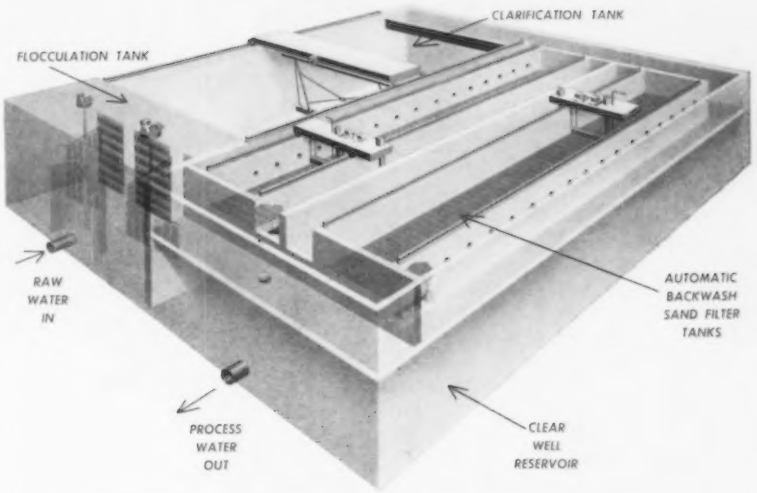
All shaft parts are hard-coated stainless steel, and are corrosion and abrasion resistant. Drainage bars also resist corrosion and abrasion. Removable skeleton inserts in the cage permit easy substitution of new inserts in 2-3 hours. All parts are easily accessible without removing any major components from the press. French Oil Mill Machinery Co., Piqua, Ohio.

Problem: Paper Brightness

Solution: High Quality Process Water...

supplied by

The HARDINGE WATER TREATMENT SYSTEM



For paper plant water supplies, the Hardinge equipped water treatment system is available in unit sizes of from 1 M.G.D. to 5 M.G.D. Flocculation, clarification, and filtration equipment is combined in modular tanks and sized to your requirements for a continuous supply of high-quality water. Can be furnished complete with automatic plant controls.

The complete process, as illustrated above, provides controlled conditioning with chemical coagulants, pre-clarification of the heavier settleable solids, and sand filtration.

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Competition Causes Trend Toward New Coatings, New Methods

New developments in this field are: ✓ Quick-set coating latex ✓ Lighter weight papers ✓ Pre-cast clay coating ✓ Multi-purpose resin emulsion ✓ PVA as coating adhesive.

Paul D. Van Derveer,
Associate Editor,
Paper Trade Journal

The trend toward lighter and lighter weight printing papers was noted again and again at TAPPI's 12th Coating Conference. First one speaker, then another, mentioned the dynamic search for lighter weights as a means of fighting costs and competition.

How is coating concerned with lighter weights? Well, the coating people feel that only through coating will opacity and other desired optical qualities be obtained. They admit that a great deal of work needs to be done to develop coatings to provide these properties and also point to the need for still further research and development work to reduce the weight of the coating itself.

F. H. Frost of S. D. Warren, during a panel session, focused attention on the problem when he said, "There is a compelling urge to reduce the weight of coated papers without reducing bulk, opacity and other properties." At the same time he questioned the place of the calendering operation in the production of such papers.

"With increased postal rates," said A. G. Sharp, senior vice president of Kimberly-Clark, as he put his finger on one of the primary reasons behind this trend, "I expect the search for lighter weight papers into the 30-32 lb. weight range to continue. I don't feel that a satisfactory paper of this type has been produced yet." Mr. Sharp was guest speaker at the annual conference luncheon.

The humorous aspects of this trend were visualized by W. P. Taylor of Champion at a panel session when he speculated, "If we ever attain the low weights we seek and continue to sell paper on a pound basis, we may attain the ultimate of zero lbs. and may have to pay the printer or converter to take the paper away."

"Opportunities unlimited" for the paper industry said guest speaker, A. G. Sharp, senior vice president of Kimberly Clark at annual luncheon.

Variety of Technical Papers

This year's coating conference was held in Buffalo, N. Y., and attracted a large number of mill men, many with a devoted following of equipment or chemical suppliers. Total attendance numbered nearly 1,000. "Adhesives for Coating" was the conference theme and this apparently covered such subjects as: adhesion to fibrous materials; coating trends; new pre-cast clay coating process; assessment of coated art papers; paper coating in Germany; starch requirements; rheological properties and flow modifiers; new cationic latex; coating preparation; use of polyvinyl alcohol; and a new multipurpose resin emulsion.

Future of Coating

A look into the future of coated papers was given by A. G. Sharp in his post-luncheon speech titled, "Opportunities Unlimited." He termed the present period, "The most rapidly changing era the paper industry has ever faced!" His advice to management in these highly competitive times was, "I expect competition to increase in the next five years. The paper manufacturer will need to take bold forward steps and must have a driving urge to succeed."

From Mr. Sharp's viewpoint the consumption of coated paper for magazines will grow only slightly in the next few years and since this is the major outlet for coated papers (70 per cent of total production), our industry must diversify to other end uses to maintain a continued growth rate. "We must move coated printing papers into areas which have not been penetrated yet," said Mr. Sharp.

Potential growth areas, which he pointed to, were: colored papers and other special effects, paperback and educational books, papers for business machines and data recording, papers for facsimile transmission.

Technical Papers

The adhesion of coatings or glues to fibrous materials usually is a mechanical ("hooking") effect, according to J. J. Bikerman of Massachusetts Institute of Technology, who gave the first of the technical papers. He noted that the rate of formation and setting of adhesive joints with fibrous adherends is determined by the shape and size of pores in the adherends, their wettability and their tendency to swell, and by the viscosity and the surface tension of the adhesive.

A somewhat different theory on adhesion was presented by T. Alfrey, Jr., of Dow Chemical Co. who stated that the effective adherence of one solid to another, depends not only upon the intermolecular forces acting at the interface, but also upon geometrical factors which control the multi-axial stresses in the two media. In the case of a very thin layer of adhesive material, the geo-

metrical factors can be of decisive importance. Thus a weak adhesive may yield a strong joint and vice versa.

A new process for pre-cast clay coating was the subject of a paper by F. D. Bergstein of Interstate Folding Box Co. Inc. the process (described in PAPER TRADE JOURNAL'S April 10, 1961, issue), a clay/adhesive composition is applied to a metal surface, dried, and then transferred intact onto the base sheet which has first been coated with a film of adhesive.

The company has incorporated equipment for this process into an existing 100-inch six-cylinder machine. This will coat the full range of widths and grades from .015 to .036 inches, and is said to be the world's first on-machine cast coating operation. Advantages for the process are said to include fast drying, simplicity, adaptability to on or off machine coating, and ability to coat a wide variety of base stocks. The end product is reported to have high brightness, outstanding gloss, excellent printability, excellent nonfade properties and adaptability to colors.

A paper on techniques for the assessment of coated art papers, prepared by I. F. Hendry of Wiggins Teape Research & Development, England, was given by J. A. S. Newman of the same company. Certain techniques of surface measurement of the sheet and of controlled printing have enabled small improvements to be perceived. It is necessary to detect these small improvements because it is difficult to make sudden outstanding improvements.

Details of coating machinery and techniques in the Feldmuhle Paper and Pulp Mills Corp., Germany, were revealed for the first time publicly by M. Judt of that firm.

A coating preparation system at Union Bag-Camp's Franklin, Va., mill and its evolution were described in a paper by R. W. Bondurant, Jr., and K. E. Bradway. The initial semi-continuous system was capable of producing 5000 gallons of coating per day at 55 per cent solids. The present system is capable of handling up to 24,000 gallons per day at 50 per cent solids.

A. D. Jordan, Jr., of the Rohm & Haas Co., described a new multipurpose resin emulsion for paper coating. Designated Rhoplex R-9, it is an acrylic-modified vinylidene chloride emulsion polymer which is said to form coatings with an excellent degree of resistance to water, solvents, abrasion and passage of water vapor. Properties of the new emulsion were discussed and compared with other thermoplastic polymers.

Discussing new pre-cast coating process is F. D. Bergstein, Interstate Folding Box Co.

Panel Session

In addition to the above technical papers a panel symposium, chaired by L. A. Gilbertson of Marathon and moderated by R. T. Trelfa of Perkins-Goodwin Co., was held on adhesives for coating.

Panel member, F. H. Frost of S. D. Warren, discussed the future for pigment binders, especially as concerned with enamel papers. F. Kaulakis of Consolidated Water Power & Paper dealt with coated publication papers. He pointed out that starch is a highly adaptable material which can be modified over a wide range. Supposedly superior synthetic film formers lose much of their advantage when diluted with 16 parts or so of pigment, according to Mr. Kaulakis.

Coating of paperboard was the topic of J. T. Loomer of Continental Can Co. He predicted that coating usage of the future depends not only upon the ability of coating to improve printability, but to add or improve upon physical properties of the board itself. He discussed both cylinder and fourdrinier grades, and remarked that we should aim at lower coat weights.

The use of the adhesive as the primary component of coatings with pigments being utilized only to modify them for specific end uses was discussed by R. H. Mosher of Kimberly-Clark.

W. P. Taylor of Champion Paper & Fibre Co., in a rapid-fire commentary, suggested that we should consider what the coating business could do for the adhesive manufacturer. He felt that our industry has not taken advantage of the multiplicity of products offered. There are a great many different latexes and we are trying to use these as substitutes for casein, glue, etc., rather than for their own properties. Some offer a good approach to dull coated papers which he expects would be well received.

Use of Polyvinyl Alcohol As a Color Coating Adhesive

George P. Colgan,
Supervisor of Paper Technical Service,

Joseph J. Latimer,
Chemist, Paper Technical Service,
Air Reduction Chemical & Carbide Co.

Uniquely excellent qualities of pick strength, gloss, brightness, opacity and oil resistance were attributed to polyvinyl alcohol when used as a binder in clay coatings. In the past one factor which precluded the use of PVA as a binder in spite of its impressive adhesive strength was cost. Now, with greater availability, its price has been reduced considerably.

Five different degrees of hydrolysis grades of PVA are available commercially, and are available in several different molecular weight types. Essentially high, medium and low molecular weight products are available. Higher molecular weight types are more viscous and are characterized by the viscosity of their 4 per cent aqueous solutions.

The studies discussed in this paper have indicated that for coating medium color work the PVA should be at least fully hydrolyzed and have a medium molecular weight. In this work predispersed clay, Vinol 125 (a super hydrolyzed grade of PVA) and water were the components of the coating colors. The amount of binder used (5 parts to 100 parts of clay) was that which gave in the dried coatings a critical wax number of 5 to 8, depending on the choice of raw stock.

The viscosities obtained at this level of pick strength compared favorably with other typical commercial binders such as casein, soy protein and starch.

As is the case with other acceptable binders, the high solids colors

Panel session on adhesives for coating. From left: L. A. Gilbertson, Marathon; R. T. Trelfa, Perkins-Goodwin; F. H. Frost, S. D. Warren; F. Kaulakis, Consolidated W. P. & P.; R. H. Mosher, Kimberly-Clark; W. P. Taylor, Champion; and J. T. Loomer, Continental Can.

become more fluid when sheared, and at lower solids Newtonian flow properties are approached. It was shown that PVA is some three times more efficient than casein or soy protein with respect to adhesive strength. With its high adhesive strength, the use of PVA permits high pigment to binder ratios and consequently opacity and brightness properties are improved. The presence of more pigment in a unit of surface area also favors improved gloss.

The greatest present obstacle to complete acceptance of PVA in the large volume commercial grades of paper is the difficulty in obtaining complete water resistance. It can be made water resistant by using any of several curing agents, the most practical of which are urea and melamine formaldehydes at present. None of the curing systems presently available are suited to all situations, but with process or equipment modifications, excellent water resistance can be achieved. In oil and grease resistance PVA is outstanding.

Rheological Properties and Flow Modifiers for Trailing Blade Coatings

J. F. Hern,
Technical Service Representative,
Nopco Chemical Co.

Described in Mr. Hern's paper was the role additives may play in altering and improving rheological properties of high solids, trailing blade coating colors, so that higher coat weights with improved surface and printing properties, can be produced.

Laboratory studies were made using the Hercules High-Shear rotational type viscometer and a modified Time-Life bench model trailing blade coater. In the studies a typical letterpress and a typical offset formula were used representative of trailing blade coatings throughout the industry. One was a starch-latex formulation for letterpress; the other, for offset, was a protein-latex formula.

Curves were shown to demonstrate that with a given formulation, coat weight increases as the blade pressure is decreased. These plots were non-linear and showed that coating weight increases at a faster rate than blade pressures are decreased.

As the percent solids of both the starch and protein formulation was increased the plastic and apparent viscosities, yield stresses, and thixotropic indices all increased. Contrary to the literature it was found that the leveling index also increased with increased solids. When applied with the lab coater these same coatings showed that increased solids gave higher coat weights at each blade pressure setting. This same effect was true of the protein coatings but to a lesser degree. Practically all additive work was done at 62% solids, since the starch-latex control without an additive gave a borderline coating as far as leveling index (approx. 0.25) in relation to roll coating "operability" was concerned.

Additives were chosen from such chemical classes as soluble and metallic soaps, fatty mono and di-esters, sulfonated fats and oils, fatty nitrogen compounds, polyglycols, and miscellaneous blends. Many of the additives tested increased all of the flow variables much the same as the effect of increasing the solids. Many also produced similar effects in the protein-latex formula although the overall coating weights are lower than those of the starch work. However, as in the starch coatings higher coat weights were achieved using certain additives. Additives which exhibited this phenomenon fell into the class of fatty esters, some of the soluble and insoluble soaps, sulfonated oils, and some of the fatty nitrogen compounds. Use of this type of additive may be of great help to the coater who has developed a successful formula for another method of coating and wants to use it on a newly installed trailing blade coater, needing a viscosity modifier to give him the coat weight he desires.

Such an additive may also aid the coater who has limited dispersing and pumping equipment and cannot increase his solids enough to give him the desired coat weight. A third user might be the mill whose trailing blade coater is limited in controls for adjusting blade pressures to increase his coat weight.

Conversely, several additives in the polyglycol class were found to have just the opposite effect. Rheograms of the same starch coating at 62 per cent solids with and without an additive of this type showed flow values were lowered by the additive. The blade pressure-coat weight curves of these same coatings showed that the additive has lowered the coating weight at all blade pressure settings. Another additive in this class was found to exhibit the same

effects to the protein-latex coating. It was further found that by increasing the per cent solids of the coatings which contained additives of this type, the same coating weight curve as that of a lower per cent solids control could again be obtained. This permits a coater with limited drying capacity to run his coater at higher speeds and obtain the same coat weights at higher solids. Also, it allows the user of a high viscosity coating to go up in solids without adversely affecting his flow properties. This is especially true if a coating is very viscous and can be fluidified by the additive.

In studies of the effect of blade calipers it was shown that the lower the blade caliper the more flexible the blade, the higher the coat weight at each blade pressure setting.

The sale of water-based plastic resins for paper manufacturing and paper converting will total more than $50 million this year, it was predicted at the coating conference. C. A. Godsell, regional manager for Shawinigan Resins Corp. stated that this dollar volume represents upwards of 120 million pounds of resin. He added that the sale of aqueous polymer systems in the past five years has risen about 50 per cent, almost paralleling the impressive growth of paper product sales.

"The growing market for paper products," he continued, "has paced the close technical cooperation between the plastics and paper industries and has stimulated the development of new resins and emulsions for paper applications."

Mr. Godsell said further that one of the more important and fast growing applications for plastic materials is that of wet-end additives which can be used on existing equipment. "This is the most convenient method of paper sizing," he said, "and as such is undergoing a great deal of development work.

Cationic Latex with Controllable Penetration and Set Off Properties

E. J. Heiser,
Section Head of Paper Group,

R. W. Morgan,
Coatings Field Development Chemist,

A. S. Reder,
Coatings Field Development Chemist,
Coatings Technical Service
Dow Chemical Co.

Quick-set coatings offer new potential to the paper industry, according to E. J. Heiser. A new cationic latex in which the stabilizer is part of the polymer has been developed, and when used in a pigmented coating formulation, can be chemically set into an immobile, mar resistant structure instantaneously when exposed to alkaline materials such as ammonia gas.

The new product, tabbed Experimental Latex X-2581, is basically a styrene-butadiene type made by a unique polymerization technique. In contrast to other cationic latexes which have attained their charge through the addition of cationic surfactants, the cationic charge of X-2581 is inherent in the latex polymer itself. This enables it to react instantaneously with alkaline materials.

Potential applications include: control of penetration into lightweight raw stock; control of penetration into bagasse board and other highly porous surfaces; control of setoff of wet coating on equipment; possibility of multiple heavy wet on wet coatings; preparation of quick set latex printing inks.

It overcomes some of the problems in the coated magazine paper field where the trend has been toward lighter and lighter basis weights with the attendant problem of penetration into the body stock leaving insufficient coating on the surface. With quick-setting X-2581 this penetration can be controlled. Used in applying wet on wet multiple coatings, it would eliminate the need for drying after each coating layer.

To illustrate the ability of ammonia gas to gel the coating, Mr. Heiser showed slides where the cationic latex was used as the sole binder in a clay coating formulation. Exposure of one half of the fresh coated surface to ammonia gas resulted in instant setting. When a finger was drawn diagonally across both halves of the sheet, the portion exposed to ammonia gas was unmarked while the other portion was severely streaked.

Other desirable features of X-2581 were shown to be: high pick resistance; significantly higher gloss than with anionic latex; exceptional wet rub resistance (even when tested immediately after calendering and coating).

One problem pointed out was that of limited compatibility in conventionally prepared coating formulations. For instance the latex could not be added to alkaline systems dispersed with complex phosphates or other basic materials because of alkali reactivity.

Starch Requirements for Paper Coating

A. Harsveldt,
Nationale Zetmeelindustrie N.V.,
Veendam, The Netherlands

One of the most important features of a coating color is water retention. According to Mr. Harsveldt this phenomenon is related to the degree of dispersion of the starch in question and the structure of the starch molecule.

Figures were shown demonstrating the relationship with degree of dispersion, the method of starch modification and more specially the influence of groups introduced in the starch molecule by oxidation, etherification and esterication. The importance of water retention in transfer coating and its influence on the coating pattern were discussed.

The dynamical yield value is another factor, which can be correlated with the splitting of the coating film between the applicator rolls and the paper. The influence of ionic groups like carboxylic groups which give a high yield value to the coating color was demonstrated in rheological diagrams. Non-ionic groups like hydroxyethyl groups confer a low yield value and are preferred for

Representatives of four countries are: M. Judt, Feldmuhle Papier - und Zellstoffwerke, Germany; A. Harsveldt, Nationale Zetmellindustrie N. V. Holland; J. A. S. Newman, Wiggins Teape Research and Development Ltd., England; and A. W. Neubauer, Crown Zellerbach, Camas, Washington.

reducing coating pattern.

The effectiveness of starch as a pigment binder or its adhesive strength is brought into relation with the degree of dispersion and the nature of the groups in the starch molecule.

Carboxylic, carbonyl and aldehyde groups do not favor adhesive strength. Hydroxethyl groups are however very effective here.

The receptivity and the drying time of printing inks are reflected by the presence of the coating layer on the surface of the body stock, and the percentage of binder present, and correlate directly with water retention. If we fail to maintain coating hold-up we obtain the effect of an impregnated sheet.

Coating hold-up was said to be more difficult in low solids size press coating than it is in high solids machine coating.

The Preparation of High Solids Casein Coatings

H. K. Salzburg, L. E. Georgevits and W. L. Marino,
The Borden Chemical Co.

Methods of controlling viscosity and obtaining water resistance in high solids pigmented casein coatings were discussed by Mr. Salzburg. These included: the use of dicyandiamide, effect of pH, chlorinated casein, use of enzymes, use of latex. In this work, it was assumed that commercial coating with new forms of casein would require 60 per cent solids, and the ratio of adhesive solids to clay would be about 15 per cent, and that the dried coating should have wet rub resistance.

With dicyandiamide large quantities are required, 20-30 per cent on the casein in order to be effective. It does not impair water resistance or adhesive strength.

Low viscosity may be obtained working at pH 5.8 or 11.0. At the low pH, off-set inks do not dry well but good water resistance is obtained. At the high pH, viscosity stability is a problem and it is difficult to obtain good water resistance.

By using small amounts of enzyme a considerable reduction in viscosity may be obtained at only a slight loss in adhesive strength and water resistance. Enzymes can be used at a cost of somewhat less than one cent per pound of casein. One drawback may be the holding period of 20-30 minutes which is necessary to permit the enzyme to act. At 60 per cent solids it was stated that enzyme converted casein gives a much thinner coating than 25 per cent dicy (casein basis), but at 64 per cent the two colors have about the same viscosity.

By using latex, viscosity may be reduced, and water resistance and flexibility are improved but cost is increased.

Lab Manual for Pulp and Paper Mill Testers

A Laboratory Handbook of Pulp and Paper Manufacture, by Julius Grant, Chemical Consultant.

During the 19 years which have elapsed since the first edition of this book, many innovations and new processes have been introduced to the pulp and paper industry; new raw materials and new methods of using them require new laboratory technique. In addition, a considerable amount of work has been carried out on existing methods of analysis and evaluation, and there are many new or modified procedures to be described and discussed.

An important feature of the postwar years has been the trend towards the standardization of testing methods, both nationally and internationally. Organizations active in this work as well as the activities of the International Organization for Standardization (which seeks to correlate the work of the national bodies) are dealt with further in the book.

The author rightfully states "a work of this kind must necessarily take cognizance of these standard methods, critically if necessary, but it should not become a mere catalogue of them." The general policy, therefore, has been to discuss each testing method in its appropriate place, to make reference to the standard and other methods available, and to describe them with a degree of detail which depends on how readily the information is available elsewhere.

Considerable revision and rewriting as well as the insertion of much entirely new work has been done. In this connection, special mention may be made of the sections on new pulping methods, packaging, paper and board testing, the use of plastics in paper and the application of statistical methods. Mill instrumentation has been dealt with only insofar as it falls within the scope of a laboratory handbook. The references to the original literature have been updated, and full recognition has been given to work aid methods emanating from countries other than Great Britain. It is important to emphasize that this book has been written with the requirements of the British Pulp and Paper Industry particularly in mind. 523 pp. $17.50 per copy. Available from Lockwood Trade Journal Co., Inc., 49 West 45th Street, New York 36, N. Y., or St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

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How the Corrugated Box Industry Operated in 1960 and . . .

What happened in the cost-price squeeze in this segment of our industry. Excess capacity and intense competition have resulted in declining prices in face of rising costs.

Alvin A. Newburg,
Statistician, Fibre Box Ass'n.

Total shipments of corrugated boxes in 1960 were approximately 108.5 billion square feet. Actually, this is down only 1.3 per cent from the all time record high shipments of 1959. Going back one more year, we find that our shipments in 1958 were 97½ billion square feet and, therefore, while our two year growth is normal, we picked it all up in one year. Corrugated volume was sold for $16.20 per thousand square feet in 1960, 0.7 per cent above the 1959 figure of $16.09.

So far in 1961, our volume has been fair. In early 1960 the shipments were at high levels; in fact, January 1960 was an all time high for that month. In January of this year we produced at a rate 4.1 per cent below 1960's January. In February we improved our production and the first four weeks of March are showing an increase of 1.0 per cent over the same period in 1960. It looks as if we've turned the corner. So far this year we shipped 1.8 per cent less than we did in the relatively high period of 1960. If we look at the sections of the country we find that in the eastern part we have an increase of 0.3 per cent over 1960's rate. On the Pacific Coast, our increase is 3.0 per cent over the same period of the previous year, but the midwestern part of the country shows a decrease of 4.5 per cent compared to 1960.

The largest 20 companies lost 0.7 per cent of the national market and the 225 smallest companies picked up 0.9 per cent in 1960. Two points are important here—first is that in our industry the big get smaller and the small get bigger. This is a new twist. Perhaps more important is the tremendous competitive hauling and pulling that went on between the first 20 companies with practically no change in their proportion of the industry. I should hate to see a cartel type of business developed here such as is in operation in many European industries and was in operation in the electrical industry in this country. However, I wonder if we have taken a good long look at statistics like this and then looked at the profit and loss statement.

Number of Companies-Capacity

We know that a number of companies have been merged, but in spite of this, the total number has increased by one third during the past 10 years. The number of plants has even a greater increase. In 1950 we had 481 plants and by 1960 the figure had grown to 812 plants, practically a 70 per cent increase. This brought to mind the fact that capacity has probably increased more than either of these items. To get a bench mark on where we stand today, we asked the auditors to check the number of hours the combiners operated during 1960. Eighty-five per cent of the industry gave us figures. These show that we are operating 95 per cent of two eight-hour shifts for five days a week. This means we're running about 76 hours a week.

Just so you don't immediately go out and build another 330 plants, remember that if we had the orders we could run the combiners at least six days a week—not five days and could run 24 hours a day in place of 16. This means we're theoretically operating only about 50 per cent of the potential. All we lack is the orders.

Raw Materials Consumed

The tonnage of board consumed in 1960 was 7,872,100, only 110,000 tons less than the consumption in 1959. This represents a decrease of 1.4 per cent. We're still making lighter weight corrugated boxes. If we take the corrugated tonnage consumed and divide by the square feet shipped, we develop a weight which includes the waste required in manufacturing. In 1923, this weight per thousand square feet of corrugated boxes was 207 lbs. By 1940, it had decreased to 162 lbs. In 1959, our weight was 143.1 lbs., and this year it is 142.8 per thousand square feet shipped.

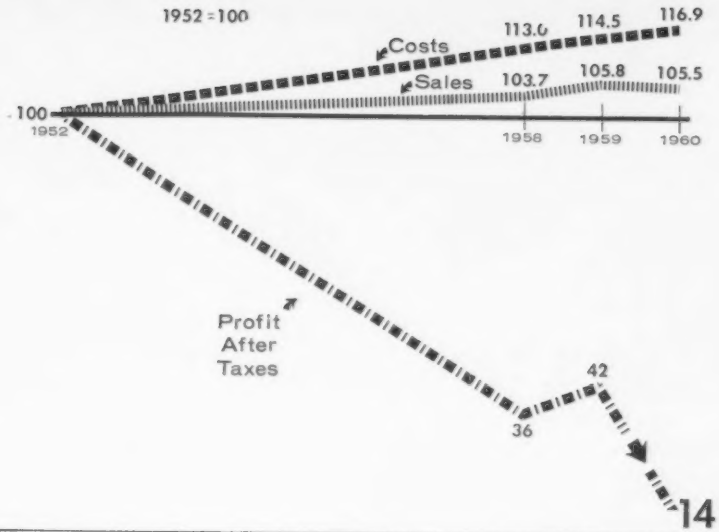
The consumption figures during the first 12 weeks of 1961 indicate that we have reversed the declining volume trend and we are turning up. In January the consumption was 142,662 tons per week and in February, 144,818. At this point we were down 4.5 per cent compared to 1960. The last four weeks show the cut up as being 152,329 tons per week—only 0.2 per cent less than last year and now our loss has been cut to 3.0 per cent compared to 1960.

Production—Consumption—Inventory

In 1954 container board production was higher than consumption by 536 tons per week but in 1960, production was 5,886 tons per week higher than the consumption. In other words, besides an inventory increase there is a diversion of containerboard to other uses than corrugated boxes.

The paperboard mills made 8,178,-

Presented before the Fibre Box Association Spring Meeting at the Fairmont Hotel, San Francisco, Cal., April 13, 1961.



ITEM	1952	1958	1959	1960	Percent Change 1960	
					Over '52	Over '59
Sales	$15.75 M sq.ft.	$16.34 M sq.ft.	$16.67 M sq.ft.	$16.61 M sq.ft.	+ 5.5%	- 0.4%
Costs	13.91 M sq.ft.	15.72 M sq.ft.	15.92 M sq.ft.	16.26 M sq.ft.	+ 16.9	+ 2.1
Profit before Taxes	1.84 M sq.ft.	.62 M sq.ft.	.75 M sq.ft.	.35 M sq.ft.	- 81.0	- 53.3
Profit after Taxes	.78 M sq.ft.	.29 M sq.ft.	.36 M sq.ft.	.12 M sq.ft.	- 84.6	- 66.7
Percent Profit before Taxes	11.7%	3.8%	4.4%	2.1%	- 82.1	- 52.3
Percent Profit after Taxes	5.0%	1.8%	2.1%	0.7%	- 86.0	- 66.7

SALES—COSTS—PROFITS

200 tons of containerboard in 1960—only 0.5 per cent less than the record previous year. In addition to this total, 412,400 tons were exported which make a production figure of 8,590,600 tons against a six day a week capacity of 9,819,000 tons as of the end of 1960. This spread of 1,228,000 tons will take care of any orders the box shops can send their way during this year.

On January 1, 1961, the box shops had within 100 tons of the all time high inventory. The 995,700 tons represents a 6.9 weeks of supply but by March 1, 1961, this figure had dropped to 951,200 tons and 6.7 weeks of supply. Since then, we've started building inventory again and are probably up to 975,000 tons.

Corrugated Box, BLS All Commodity Price Index

If you examine corrugated box price trends you will see that in January of 1960, the price trend average was $16.97. In December, it was $16.44. Each year in the middle of the year, roughly July, we have a seasonal decrease in our price trends. In the four years 1956 through 1959, the July sales averaged $16.23 while the December figure averaged $16.66. That's an increase of 2.6 per cent. But what happened in 1960 after we got out of our seasonal decrease—we find the price increases only 0.4 per cent. The December figure of $16.44 has now been reduced even further. January was $16.41, February $16.40 and March, $16.33. We haven't been that low since the middle of 1958 except for the July seasonal of 1959. Now, take a look at the BLS All Commodity Price Index. Remember that this is an index of the price at which approximately 2,000 items are sold. In 1959 the index was 183.8 and in December of 1960, it was the same with the full year's figure averaging 183.9. In other words, there is no decrease. The only decrease is in our industry. I wonder why.

The Cost Price Squeeze

Let's go over to another subject, inflation, and then go into the cost price squeeze. I'd like to quote two gentlemen for whom I have the utmost respect. First, Dr. Samuelson, an economics professor of the new frontier school, said he now hoped we could hold inflation down to 1½ per cent or 2 per cent per year from the former 5 per cent we did have.

The second person I'd like to quote is that good thinking and well thought of individual who formerly ran Ft. Wayne Corrugated Box Co. —Harold Treen. Some years ago at one of these meetings, he told us that we would have to build a "profit" into our cost system in order to stay level. He was way ahead of us in his thinking. How right he was then and how right he is today. Just take one item, depreciation. If we are charging depreciation on our machinery at 10 per cent, by the time we have it charged off, inflation will cause us to pay 20 per cent more to replace it. Where will we be unless we follow Mr. Treen's excellent advice?

Sales—Costs—Profits

In the accompanying figure you will see a chart entitled "Sales-Costs-Profits." This is an index chart and it takes 1952 as a standard. The line labeled "Sales" shows up the comparison of sales between years with 1960 being 5½ points over 1952. Look at the direction of the cost line. The index for 1960 is 116.9 which means that our costs have increased 17 points and our sales, 5½. You know what is bound to happen before I tell you—something had to give and it was the profits. The figures show that the profits of 12 cents per thousand square feet on a selling price of $16.61 is 0.7 per cent. Not 7 per cent but 0.7 per cent after taxes.

Compare the figures for 1960 with the other years: 1958 and 1959 were relatively poor and 1952 was not outstanding at five per cent after taxes. The index of 14 points for 1960 is quite a shocker. Percentagewise, we have 66.7 per cent less in net profits than we had in 1959 and 86 per cent less than 1952.

Let me tell you about return on investment—this is why we're in business. The 1960 figure turns out to be in the neighborhood of 5 per cent before taxes. The return on investment in 1947, perhaps our best year, was 61.5 per cent before taxes. That makes a "bum" out of the year 1960. In other words, we have been on one swift toboggan since the year 1947 and the ride hasn't been too enjoyable.

Let's hope that with the greater money supply we have in store for us, along with the indication of increased inflation, that we will heed some of the rules of the marketplace and reflect our increased costs in our sales prices.

How the Celgar Mill Was Engineered and Built

Last week we presented a detailed article describing the 500 ton per day bleached kraft market pulp mill of Celgar Ltd. near Castlegar, B. C. Here we give details on site selection, designing and actual construction.

Celgar's commitment with the Provincial Government in connection with the terms of Tree Farm License No. 23 called for a 300-ton pulp mill to be constructed and in operation by March 1, 1961. The active construction phase began in 1957 when the present site was agreed upon and clearing undertaken.

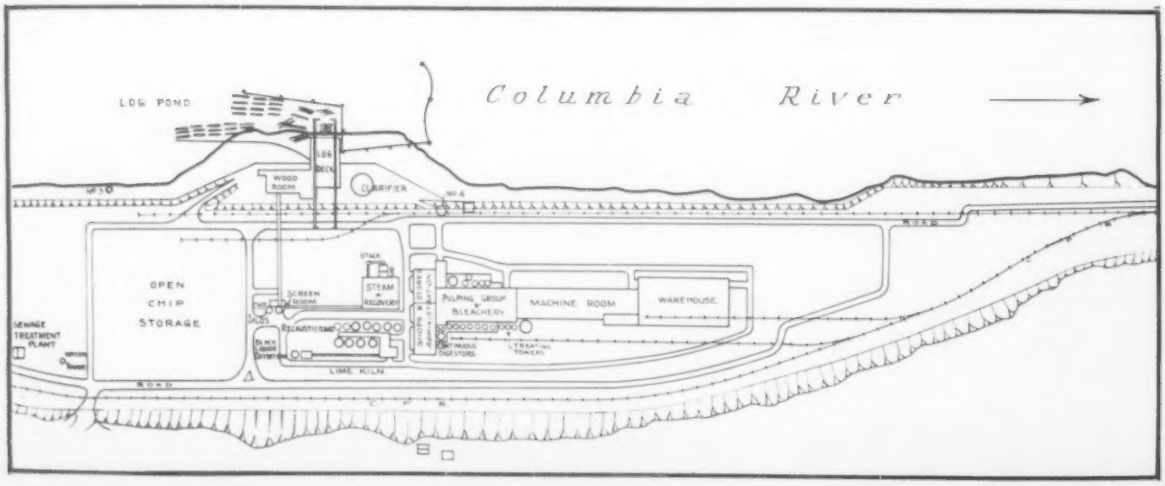
Selecting the Site

The mill site comprises an area of approximately 80 acres, some 2.5 miles west of the town of Castlegar, on the south bank of the Columbia River. The initial investigation comprised of test borings and open pits to ascertain the load bearing capabilities of the soil. This study disclosed that in general a loading of 4,000 lbs. per square foot was safe over the projected building area. Four machine test holes around the extreme perimeter of the building area were sunk. No. 1 on the river side went down 304 feet and was still in dense fine sand when discontinued. No. 2 was drilled through a similar formation and struck bed rock at 240 feet. This hole was carried down 30 feet into the solid rock. No. 3 and No. 4 holes were stopped at 100 foot penetrations and still in dense sand and gravel. Two lenses of silt were encountered ranging from 9 to 17 feet in thickness. Both layers were inclined toward the river at an angle of approximately 2½ feet per 100 feet. This material was extremely unstable and with the addition of three or four per cent moisture, became semi-fluid. The upper lense was intersected in the cut and fill program and was wasted from the site. 1,018,000 cubic yards of cut and fill material were handled by self-loading carriers and cranes, but predominantly by carrier. About 240,000 cubic yards of silt were rejected and a similar quantity of good material obtained from a borrow pit near by. In addition approximately 34,000 cubic yards of rock for rip rap were quarried from Robson Ridge and used to fill along the wood room shoreline.

A center line was established along the east-west axis of the site at El. 1420. The cut and fill very nearly balanced out except for the wasted silt, and grade was established sloping six inches per 100 feet toward the river. All fill was compacted to 90—100 proctor.

The woodroom is the only unit constructed on filled ground and particular care was used to obtain satisfactory foundation conditions. The method used was as follows: 503 lineal feet of sheet steel piling was driven along the foreshore. Starting from the piling, an earth fill dam of selected gravel was constructed. This dam sloped from the piling at 2:1 slope to El. 1409. It terminated in a 20 foot crest then sloped in the shoreward direction at 1½:1 slope. In behind the dam material from the cut areas was used. All was compacted to 100 proctor. Steel and wood piles were then driven, not for load bearing, but rather as a means of further consolidation. These piles were cut off and capped below the building foundation. There has been no indication of undue settlement in

LAYOUT OF DEPARTMENTS AND BUILDINGS ALONG RIVER BANK.



Taken across the Columbia River, photo shows Celgar's new bleached kraft pulp mill situated two and a half miles above Castlegar. Mill has designed capacity of 500 tons a day of bleached kraft pulp; includes many of the most advanced design features.

any structure to date.

The design engineering was undertaken by H. A. Simons with Celgar retaining the final authority to approve all phases of the engineering work. This arrangement has been satisfactory and in general resulted in a good utilization of experience and technical skills from both organizations. As the design work progressed in Vancouver, the H. A. Simons' field staff was built up, and early in 1959 the major construction work got underway when a contract for concrete foundations and buildings was let.

The construction schedule was basically established early in 1957 at which time the terminal dates rather than starting times were set up. This early schedule indicated January 1961, for brown stock and April 1, 1961, for bleached pulp production. These dates proved to be fairly realistic, though both were stepped up about two months, due to better than anticipated field progress.

Unique Method of Supervision

The project was carried out in a somewhat unique manner, in that there was no general contractor assigned. Approximately 40 contractors have carried out specified work done largely by firm price or unit price contracts and a very minimum amount done on a cost-plus basis. The designing engineer's field organization served as a co-ordinating medium and in spite of many pessimistic predictions as to the outcome of such a system, the work has been carried through expeditiously and economically. The system also demands careful expediting of material to ensure completion of the work within the scheduled time. This method of carrying out a major construction project, if properly set up, results in excellent control of cost, workmanship and progress. From the beginning Celgar maintained an engineer and cost man in the field. This liaison permitted quick decisions to be reached and retained the over-riding control that Celgar insisted upon.

All construction facilities had to be provided since the area was only rough uncleared land prior to the start of work.

The first structure erected on the site was a section of the pulp storage building, 160 ft. x 200 ft., and it served as a storage for material as well as crew shelter while contractors were getting established. Camp accommodations for 600 men followed, which was later enlarged to 900 by the use of trailers. An anaerobic-type sewage disposal plant to accommodate the full construction force was installed at the start and has operated continuously. This plant is now a permanent part of the mill and is used to treat all domestic sewage so no raw untreated effluent discharges to the river.

The type of building construction varied in the several departments, each being designed to meet the operating conditions normally encountered. These are summarized in Table I. It is very likely that Glulam roof

TABLE I. BUILDING SUMMARY

Area	Plan Area	Dado Wall	Windows or Translucent	Exterior Wall	Roof Beams	Deck
Woodroom	13500 sq. ft.	Yes	Trans.	Trafford Tile	Wood	3" Cedar
Recausticizing	5000 sq. ft.	No	Trans.	Trafford Tile	Steel	Asbestos
Boiler House	10500 sq. ft.	No	Trans.	Trafford Tile	Steel	Asbestos
Precipitator	2100 sq. ft.	No	Trans.		Steel	Concrete
Evaporator	Part of Boiler House	No	—	Trafford Tile	Steel	Concrete
Shop Mill Stores	10700 sq. ft.	No	Windows and Trans.	Concrete Block	Wood	3" Cedar
Admin. Bldg.	4400 sq. ft.	No	Window	Concrete Block	Wood	3" Cedar
Pulping Group	27000 sq. ft.	No	Trans.	Concrete Block	Glulam	Asbestos
Machine Room	38000 sq. ft.	No	Trans.	Concrete Block	Concrete	Precast Concrete
Chemical Unloading Shed	—	No	—	Concrete Block	Concrete	Precast Concrete
Pulp Storage	51200 sq. ft.	Yes	Trans.	Trafford Tile	Glulam	3" Cedar

N.B. All foundations are concrete with four-foot frost protection. Roof covering is 5-ply, 20-year asphalt and gravel.

A gantry-type, 60-ton Colby crane is used to lift truck-load size bundles from the log pond. Bundles weigh about 50 tons to stay within the crane's designed capacity.

beams and cavity-type asbestos deck, as was used in the pulping group, would have been completely serviceable and much more economical for a machine room building, particularly where an air-borne Flakt dryer is used.

Earthquake Design

All buildings designed will withstand earthquake forces as stipulated by the National Building Code for Zone 2. The weight considered comprises the dead loads plus fixed live loads with tanks filled to operating levels. Stresses and soil bearing pressures produced by a combination of horizontal earthquake forces, together with vertical loads, were increased 33⅓% over normal permissible values.

Vertical faces exposed to wind are designed to withstand the following loads:

Up to 40 ft.—15 p.s.f.
40 ft. to 100 ft.—25 p.s.f.
Over 100 ft.—30 p.s.f.

Roofs are flat or sloped less than 20 degrees to horizontal 40 p.s.f. over horizontal projection.

Construction Force and Camp Facilities

Early in the planning stage of the Celgar mill, certain standards were established. Based on the experience of previous mills of comparable size and product, these standards appeared unrealistic, but experience was to prove that figures were realistic and accurate.

Three years prior to the start of construction a field force of 1,100 total including camp operation was estimated. The peak was reached early in October 1960 of 1,141 including 17 Celgar employees. This figure compares with about 1,800 for similar mills in recent years. The total man days actually utilized were 275,000 compared with 425,000 for similar construction within the last six years.

Peak camp accommodation reached 780 men which was well within the 900 man facilities provided. This figure was lower than estimated due to a very elastic-ability of the Town of Castlegar to supply room and board for workers and it was also influenced by the very high percentage of local residents who engaged in the construction work.

Factors that Influenced The Job Progress

Several factors contributed to reconcile the smaller number of construction workers:

1. Experience proves that firm price or unit cost contracts generally require fewer man-hours.

2. Underground work, where possible, was done at an early date when it least interfered with the other trades.

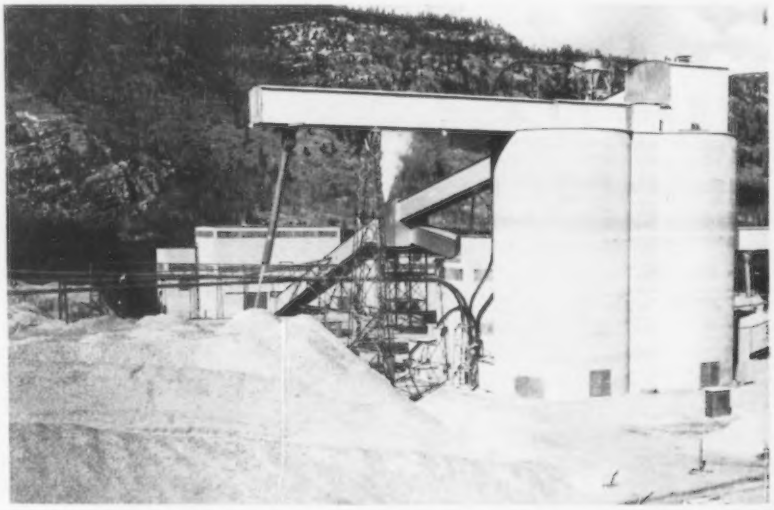
3. In the steam plant, all stairs and floors were completed before the boiler and equipment installation started, as a result the power boiler was completely installed with about 13,000 man-hours which is abnormally low. A similar situation resulted with the recovery installation.

4. Particular attention was paid at all times to maintaining usable roads to all parts of the project. This factor played a major role in keeping the progress of the job on schedule.

5. An adequate electrical power and distribution system was installed at an early stage so no restriction on the use of power by the contractors was ever necessary.

6. The setting up at the site of spooling plants by the major piping contractors permitted the contractors to meet revision requirements in the field with a minimum of delay.

7. Scale models of the woodroom, power and recovery and pulping groups were built to assist in engineering, contractor bidding and operator training.



Chips from the woodroom, shown in background, travel by conveyor into one of the two chip silos, or directly to the screen room (seen behind the silos), or into open storage. As an added precaution against dirt, chip screening takes place after storage just prior to the digesters.

View of recausticizing plant shows the compact design. Open air chip storage can be seen behind chip silos and screen room. In extreme background is the dry lumber storage shed for Celgar's new sawmill scheduled to open this summer.

Model of Celgar's steam and recovery building. Multiple effect evaporators at left, recovery and steam boilers at center, precipitator at right. Such models were extensively used in the design and construction of the mill.

This type of planning throughout the entire project resulted in reducing the construction man-days by approximately 35 per cent.

Concrete Data

The total quantity of concrete supplied for all project requirements was 29,425 cubic yards. A batch plant was set up on the site using generally bulk cement from carload lots.

The aggregate came from a pit near by and transport from batch plant to point of use was by mixing trucks. During low temperatures, a maximum of two per cent calcium chloride was used.

A full-time concrete inspector was responsible for the quality and controlled the mixing, sampling, proportioning, transport and placing of all concrete. This quality control resulted in good strong concrete, averaging well above 3,000 p.s.i. at 28 days and generally using 5½ bags of cement per cubic yard. The initial mix called for 6 bags of cement, but experience proved that 5½ bags was adequate. The biggest continuous pour was for each of the two chip silos, which were 44 feet in diameter by about 80 feet, using slip forms and constructed during freezing temperatures.

Electrical Installation

The mill is supplied with electrical energy from Consolidated Mining and Smelting Co.'s hydro-electric plants. Two transmission lines at 66,000 volts to two 3-phase, 66,000 to 13,000 volt transformers, each capable of carrying the full mill load and paralleled on the low voltage side. Each transmission line is fed from separate sources of Cominco's system so that a failure of one line should not affect the supply to the pulp mill. These transformers are situated just south of the pulp mill and power is carried on two overhead aluminum circuits to the main mill substation.

The mill system is a radial 13,000 volt distribution system emanating from the main substation which is the terminus of the incoming lines. From this sub, eleven cable circuits supply eleven 2,500 K-Va., three-phase, 13,000/600 volt transformers and two cable circuits to two—3,000 K-Va., 13,000/2,300 volt transformers. The radial feeder circuits are fed through circuit breakers with over-load and fault protection.

The circuits from the area transformers to the motors are practically all Teck cable with D.S.T.A. and either neoprene or P.V.C. covering. The cable is supported on trays suspended from the building roof beams. A very limited amount of conduit has been used where circuits had to go in the floor slab.

All motor starters are located in motor control centers housed in rooms located near the load center of the area being supplied.

This design has resulted in an extremely flexible and economical installation. It should result in very low maintenance and high serviceability throughout the life of the mill.

All mill motors are 550 volt with the exception of one 1,500 h.p. chipper motor, one 1,250 h.p. chipper motor and five 600 h.p. pump motors which are 2,300 volts. All motors up to and including 30 h.p. 1,800 r.p.m. are T.E.F.C., the remaining motors wound with random wound coils are classified as flood-proof. These motors have the windings impregnated with an epoxy resin and are considered capable of operating under extremely adverse conditions of moisture and in corrosive atmospheres. They have the significant advantage over the T.E.F.C. of a 1.15 service factor resulting in 15 per cent bonus in capacity. The larger motors with form wound coils do not have the epoxy impregnations, but do have an improved coil and slot insulation where milar and Da-

cron synthetics are combined with polyester resins and dipped in an improved hydro-carbon resin for surface protection. This type of winding as compared to conventional Class A insulation provides 50 per cent increase in dialectric strength and 700 per cent in physical strength and adds about 100 per cent to the winding life expectancy.

With the exception of the incoming lines, there are no overhead power lines on the pulp mill site.

Lighting

Mercury vapor lighting has been installed in all high bay lighting. The initial cost was higher, but the saving in power and maintenance offsets extra cost in a very short time, since the lamp life is roughly twelve times that of standard incandescent bulbs.

Another feature of the lighting is the use of lamps that do not require reflectors. The use of reflectors under pulp mill conditions is at best unsatisfactory. They soon change from reflectors to light absorbers and the general illumination deteriorates yearly and can only be kept near peak efficiency by a continual costly program of washing and cleaning.

TABLE II. STEAM TURBINE PUMPS

No. of Units	H.P.	Inlet Press.	Temp.	Exhaust Press	Driving
2	1600	600	750	175	Pumps for hydraulic barkers 1700 p.s.i., 1200 g.p.m.
2	450	600	750	175	Bleached stock to primary screens.
2	650	600	750	175	Vacuum pumps machine wet end.
1	400	600	750	175	I.D. fan recovery boiler.
1	650	600	750	175	I.D. fan power boiler.
1	70	600	750	175	Instrument air compressor.
2	500	600	750	175	Boiler feed pumps.
1	75	600	750	175	Treated water to deaerator storage tank.
2	150	600	750	175	Fire pumps.

Steam Turbines

The plant steam study indicated the average production of steam from the recovery boiler and the hog fuel boiler (hog fuel from sawmill and woodroom) would economically justify the use of approximately 8,000 HP turbine drives in place of electric motors. These turbines are Westinghouse manufacture and were supplied with reduction gears when required. The exhaust steam all goes to process use.

In the case of the boiler feed pumps, a third pump is equipped with electric motor drive, and this also applies to the fire pumps where one is electric driven. See Table II.

The I.D. fan for the power boiler has an auxiliary electric motor drive (200 h.p.) to be used in starting up the unit with no steam available from the other boiler.

Piping

The material specifications for piping were governed by the following combination of factors: serviceability for the specific use, expected maintenance costs, expected life, product or corrosion resistance, cleanliness and installed cost. The

TABLE III. PIPING SUMMARY

Service	Cast Iron	Carbon Steel	Polyester Resin Fibre Glass Reinf.	Extruded or Fabricated Alum.	Copper	Saran Lined	Lithcote or Similar Linings	Transite	304 SS	316 SS	317 SS	Glass	Wood-Stave Pressure Creosoted	Steel Coal, Tar Enamel Coated Inside & Outside
Process Fresh Water				1										
Underground Fresh Water														1
Drinking Water					1									
Long Viaduct														
Whitewater & Stock			1						1	1				
Condensate		1												
Oil Hyd. Syst. 0-2000#		1												
Steam		1												
Blow Piping									1					
Air Lines				1										
Black Liquor Weak		1							1					
Green Liquor										1				
White Liquor										1				
Causticized Liquor														
Drain Pipes	1													
Natl. Gas Undergrd.		1												
60 psi		1												
Cl_2 Gas Dry						1								
ClO_2 Liquor						1						1		
ClO_2 Gas			1									1		
ClO_2 Treated Stock			1											
ClO_2 White Water		1												
Evaporators:—Vapour —#1&#2 Effects Recir.									1					
Other Effects		1												
#1 & #2 LiquorStrong									1					
Other Effects		1												
Condensate		1												

dominant factor was corrosion resistance and product cleanliness. Generally material used for the specified services is shown in Table III.

In the use of aluminum piping, some cast aluminum hangers have failed in service. Rather than attempt a pick and choose replacement service, it was decided to replace all hangers 8" and up with steel, using polyester wrap between the hangers and the aluminum pipe. This is not a condemnation of aluminum hangers, but rather the type used in this project. The replacement was prompted initially by failures of the hangers on a 24 inch diameter suspended water line. In the use of polyester resin fiberglass re-inforced piping in the bleach plant, corrosion resistance was the major factor in its use. This material clearly serves a useful function in bleached kraft mills, and will steadily improve as mill experience is gained.

The several types of stainless have been extensively used. Approximately 90 tons of this material have been used throughout the mill for piping uses alone. Extreme care is required in welding the lighter gauges and the protected arc welding apparatus is superior.

Steel is still the major piping material. All high-pressure (600 lb. and over) lines were carefully tested and X-rayed for welding imperfections and very little trouble has resulted. A series of failures resulted on welded 75 p.s.i. steam mains. The trouble was all after a desuperheater installation where treated boiler feed water was used for desuperheating purposes. The failure has resulted from caustic embrittlement due to the water treatment chemicals and has now been corrected.

Piping in bleached kraft mills is a major cost item and justifies very careful engineering attention in both choice of materials and fabrication techniques. Piping is summarized in Table III.

LIST OF MAJOR EQUIPMENT AND SUPPLIERS

EQUIPMENT	SUPPLIER
PULPING AND BLEACHING	
Digesters, Steaming Vessels, etc.	Kamyr, Inc.
Tanks	Horton Steel
Pumps	Bingham
Ventilation & Exhaust Systems	S. F. Products
Washers, Deckers, etc.	Sherbrooke
Cowan Screens	S. W. Hooper & Co.
Centrifugal Cleaners	Can. Ing. Rand
Disk Refiner	Sprout Waldron
Bl. Liq. Oxidation Plant	Lundberg Ahlen
Hi-den. Tank Agitator	Greey Mixers
Washers, Deckers, etc.	Sherbrooke
Hi-den. W. S. Storage Tank	Can. Wood Pipe & Tks.
Screens & Centrifugal Cleaners	Can. Ing. Rand
Chemical Plant Equipment	Erco
CAUSTICIZING, RECOVERY AND POWER BOILERS	
Lime Kiln & Aux. Equipment	F. L. Smidth
Peabody Scrubber	Peabody Engineering
Hot Lime Conveyors	Jeffrey Manuf. Co.
Slakers, Causticizers, Clarifiers, etc.	Dorr-Oliver Long
Tanks	Horton Steel
Lime Rock Conveying System	Rader Pneumatics
Pumps	Can. Pumps Ltd.
Chemical Recovery Unit	Combustion Engineering
Liquor Pumps	Canada Pumps
Chem. Ash Tank Pumps	De Laval Co.
Precipitator	Research Cottrel
Sextuple Effect Evaporators	Chicago Bridge Co.
Steam Generator	Foster Wheeler Co.
Water Treatment System	Cochrane
Deaerator	Graver Ltd.
Boiler Feed Pumps	K. S. B.
Steam Turbine Drives	Can. Westinghouse Co.
Air Compressors	Can. Ingersoll Rand
F. D. Fan	Jas. Howden & Co.
I. D. Fan	Jas. Howden & Co.
Chem. Feed System	Greey Mixing Equip.
Fire Pump	Peerless Pump Co.
MACHINE ROOM	
Fourdrinier & Press Section	John Inglis
Vacuum Pumps	Roots Connersville
Harland Drive	Bepco Canada
Flakt Dryer & Ventilating Equip.	S. F. Products
Broke Beater	Black Clawson
Finishing Line	Lamb-Grays Harbour
Turntables & Bale Tyers	Tennant Corp.

EQUIPMENT	SUPPLIER
MACHINE ROOM	
Overhead Crane 25T	J. T. Hepburn
Blending Tank	Can. Wood Pipe & Tks.
Pumps	Bingham
M. G. Sets & Motors	Can. Gen. Electric
ELECTRICAL	
Main Switchboard	Canadian Westinghouse
Power Transformers	Bepco of Canada
550 Volt Distribution Centers	Federal Pacific
Motor Control Centers	Rlwy. & Power Engineering
Machine Drive Elec. Helpers	Bepco of Canada
Motors	Can. General Electric
WOODROOM & CHIP HANDLING	
Log Bundle Crane	Colby Crane & Manuf.
Hydraulic Ring Barker—30 Inches	Hansel Engineering Co.
Hydraulic Ring Barker—42 Inches	Hansel Engineering Co.
112-Inch Horizontal 9-Knife Chipper with 1250 h.p. motor	Hansel Engineering Co.
154-Inch Horizontal 6-Knife Chipper with 1500 h.p. motor	Hansel Engineering Co.
Montgomery Hog with 300 h.p. motor	Jacksonville Blow Pipe
Bark Press—51-Inch	Fibre Making Processes
Woodroom Log Handling Equipment	Letson & Burpee Ltd.
Chip Screens	Thomas A. Dillon Ltd.
Rechipper—36-Inch 10-Knife	Can. Sumner Iron Works
Chip Blowing System with 300 h.p. drive	Rader Pneumatics
INSTRUMENTATION	
Process Instruments & Control Panels	Taylor Instrument Co.
Control Valves	Taylor Instrument Co. Fisher Governor Co.
Miscellaneous Instruments	Bailey Instrument Co. Fischer & Porter Co.
HYDRAULIC	
Barker Effluent Clarifying System	Eimco Corp.
Water Pipe	Vancouver Iron & Eng. Wks.
14-Inch Check Valves	Dominion Engineering Co.
54-Inch Culvert Pipe	Armco
"Evenflo" Pump	Bingham Pump Co.
Five 6,000 U.S., g.p.m. Deep Well Pumps	Layne & Bowler

Paper Industry Profit Picture Parallels National Economy

Profits for our industry hit bottom—at least we hope it was bottom—in the first quarter. Yet earnings were down to an unnecessary degree said some industry leaders while calling for sounder marketing practices.

John W. Saunders

The recession in the national economy apparently hit bottom in the first quarter of 1961. Earnings of most paper companies were right in step with the move.

Profits continued the downward slide that showed up in the second quarter of 1960 and stayed for the rest of the year. The slide not only reduced demand but prompted producers to scramble to supply remaining markets. Production declined, but the heightening of competition brought about lower prices, official or otherwise, that resulted in a further erosion of profits.

Lower Earnings For Most

A survey of March quarter results of 45 producers shows that 31 had lower earnings than in the corresponding period last year. Fourteen, including several manufacturers of specialty products, registered increases.

Sales performance was somewhat better with 17 of the companies reporting these figures posting an improvement over the 1960 period while 22 showed declines. Profit trends for most companies, however, were not as good as their sales performance.

Paper production in the first quarter of 1961 amounted to 3,865,000 tons, down three per cent from a year earlier. Board output also fell three per cent to 3,915,000 tons. Construction paper and board dropped 14 per cent to 670,000 tons. Paper mills operated at 89.6 per cent of capacity, compared with 97.5 per cent in the 1960 period. Board mills operated at 89.6 per cent against 97.5 per cent a year earlier.

The declines in production were rather modest, considering that the first quarter of 1960 was a period of relatively good business conditions. But the intense competition to channel output in available markets took its toll, partly because of weaker price structures. Many companies reported that they had continued to tighten up on cost control and reduction programs but it appeared to be a question of running very fast to be able to stand still.

Calls for Sound Marketing Practice

While the influences of the downturn in the general economy were clear, several paper industry leaders took time out to chide the performance of the industry. "Recently most segments of the industry have been fighting for volume with little regard for profits," John H. Hinman, chairman of the International Paper Co., said at the annual stockholders' meeting.

"As in many other industries, there exists some overcapacity in our industry," John R. Kennedy, president of the Federal Paper Board Co., told stockholders of that company. "This capacity, however, is not so great as to be the determining factor in the unsettled conditions and lower earnings experienced by the industry. Sound, constructive industry marketing practices and policies would do much to reestablish proper earnings ratios."

With the first quarter behind them, most industry leaders were looking for — and expecting — improvement in the second quarter. Many, in fact, said there had been a definite pickup beginning in March. This, together with the signs of recovery in the general economy, prompted hopes of better earnings. Standing in the background, however, was nagging price weakness in some products, particularly industrial grades. Multiwall bag kraft prices were cut about 10 per cent in April following smaller cuts for the bags themselves.

Mr. Hinman noted these conflicting trends when he said: "We feel confident that the paper industry will experience some improvement in demand during the balance of the year. However, with increases in capacity that are scheduled during 1961, there will be little if any improvement in operating ratios. Earnings will still reflect the presence of substantial overcapacity and the continuing cost-price squeeze."

First Quarter Picture

Here is how a group of representative companies fared in the first quarter of 1961:

• International reported net income of $15,842,000, down 13 per cent from the corresponding period of 1960. Sales were off four per cent to $246,686,104. Mr. Hinman said the results reflected "difficult paper market conditions" as well as lower prices and volume in lumber and plywood operations.

• St. Regis reported earnings down 31 per cent to $4,306,000 despite a sales rise of one per cent to $131,412,000. William R. Adams, president, said the declines reflected weakness in products such as multiwall bags, kraft linerboard, corrugated boxes and folding cartons as well as lumber and plywood. "While several divisions showed marked improvement over last year," he said, "it was generally not feasible to raise selling prices to counter the

upward trend of costs. Profit margins suffered accordingly."

• The report of Crown Zellerbach was more laconic. Announcing that net income declined to $8,328,000 from $9,116,000 a year earlier, it blamed "high competitive conditions." The nine per cent decline in profits was in contrast to a one per cent gain in sales, which rose to $133,231,000.

• Mead, Union Bag Camp and West Virginia told much the same story. Mead's profit was off 17 per cent to $2,475,000 and UB-C's was down 21 per cent to $3,932,000. West Virginia reported earnings of $2,143,000 for the four months ended on February 28, a decline of 38 per cent from the 1960 level.

• Other industrial packaging manufacturers reported similar results. Container Corp.'s earnings slipped 13 per cent to $4,111,000 and Inland Container was down 23 per cent to $1,301,000. Profits at Packaging Corp. declined 45 per cent to $859,000 while Stone Container reported a drop of 39 per cent to $310,000.

• Diamond National, one of the better performers last year, suffered a slight relapse, with net income easing to $2,952,000 from $2,982,000 a year earlier. Sales were off more, falling to $51,692,000 from $55,482,000. William H. Walters, president, said earnings were stablized by cost-control measures begun last year while sales reflected "continued softness" in the company's markets. "I think we're over the hill as far as this adjustment period is concerned," he said.

• Standard Packaging encountered rougher going with earnings down 20 per cent to $826,000 on a sales decline of three per cent. The report cited unfavorable weather conditions and "continued price weakness" as factors. It forecast a brighter picture for the rest of 1961 "due to better operating efficiencies and lower costs in the paper and board mills."

• The news from Federal Paper Board also was grim. Earnings dropped 59 per cent to $166,000 for the first quarter while sales eased four per cent to $25,011,000.

• Scott Paper continued to be a buoyant feature although its earnings were up less than they had been last year and sales showed a small decline. Net income was $6,686,474 against $6,686,860 a year earlier; sales of $79,418,961 were 1 per cent below the record high of $80,213,247 in the 1960 period but still the second highest for any quarter.

• Kimberly-Clark stumbled again in the quarter ended on January 31, with earnings down 18 per cent to $7,021,000 while sales held steady at $102,405,000. A similar decline in earnings occurred in the second quarter of the company's fiscal year. For the first nine month, profits were $22,338,000, just barely ahead of the $22,196,000 cleared in the similar period last year.

• Hudson Pulp and Paper had good news in its report for the six months ended on February 28. Net income amounted to $1,288,000 against a net loss of $187,000 a year earlier. Sales climbed 14 per cent to $33,040,000.

• Some of the printing paper manufacturers also had good news to report. S. D. Warren boosted earnings to $1,516,000 from $1,237,000 with seven per cent of the 23 per cent gain coming from nonrecurring income. Nekoosa-Edwards posted profits of $909,000 up 28 per cent from the 1960 period. Bergstrom's earnings rose 33 per cent to $238,000. Others were on the down side, however. Glatfelter's net of $573,000 was off six per cent from a year earlier; at Oxford there was a decline of one per cent to $748,000. Hammermill's net profit fell 40 per cent to $542,000 and Sorg reported a drop of 51 per cent to $131,000.

• The newsprint picture also was mixed. Great Northern, still on the upgrade, reported a brisk increase of 19 per cent to $845,418 while sales climbed only 11 per cent to $15,145,829. Newsprint tonnage was up 13 per cent and specialty papers eight per cent.

• Minnesota and Ontario, on the other hand, was singing the blues. Profits slumped 68 per cent to $495,000 (from $1,550,000 a year earlier) as sales slumped 10 per cent to 20,046,000. Shipments of building products were down 11 per cent, newsprint six per cent and specialty papers nine per cent. Robert Faegre, president, said a recovery in March had been insufficient to offset "low volume compounded with typical cost-price pressures" earlier in the quarter.

• Riegel Paper boosted sales one per cent to $25,222,000 but earnings fell 26 per cent to $622,000. While pulp production was up, noted Chairman John L. Riegel, prices were down. "We are most anxious for the few dollars increase in price which would give us the profit this operation deserves," he said. Folding carton operations, he added, were off more than other divisions "because they are in the process of major expansion and reorganization."

• KVP Sutherland, also active in food packaging markets, reported net profit of $1,106,000, off 22 per cent and sales of $29,302,000, down eight per cent. Sales and earnings for the first half of its fiscal year were down seven per cent, amounting to $58,339,000 and $2,236,000, respectively.

• Sealright-Oswego Falls came back nicely from a slump last year, reporting first-quarter profits of $472,150, up 23 per cent from a year earlier. Sales advanced 2.5 per cent to $13,885,000. The improvements apparently reflected increased demand for the company's polyethylene-coated milk carton.

• There was gloom among the pulp producers, Rayonier reported profits down 41 per cent to $1,555,000. Sales eased 10 per cent to $30,700,000. The reason; according to president Russell F. Erickson; "Unsatisfactory selling prices that have prevailed for over a year in chemical cellulose, paper-making pulps and lumber. Intense competition has made it virtually impossible to maintain prices commensurate with increasing costs of manufacturing and distribution." The situation was not quite as bad at Puget Sound Pulp, which announced net income of $1,116,000, down 14 per cent from a year earlier. Sales, including those of the Hopper Paper division acquired last year, rose 27 per cent to a new high of $11,434,000.

• Brown slipped into the loss column after showing improvement last year. The deficit of $23,987 compared with one of $34,405, in the first quarter of 1960. Sales dropped to $11,931,206 from $14,735,762. Leonard A. Pierce, president, said he expected results for the second quarter to be "substantially better."

• The decline in building materials and industrial packaging continued to hurt Fibreboard, which reported net income of $166,000, off 59 per cent from a year earlier. Sales dipped 4 per cent to $25,011,000.

• Among the smaller specialty producers Keves Fibre announced profits of $428,566, down two per cent; Crystal Tissue reported net up 87 per cent to $33,872 and MacAndrews & Forbes posted an increase of 24 per cent to $237,110. Paterson Parchment was up five per cent to $103,000. Rogers, however, dropped 62 per cent to $31,808.

NEWS OF CONVERTERS

Rotag to Open New Plant in New Jersey

Rotag Manufacturing Corp., maker of merchandising tags, hang tags and other point of purchase tags and labels, will soon occupy a new plant in Carlstadt, N. J.

Rotag's new plant, situated on a one and a half acre tract close to Route 20 in Carlstadt, will embody the latest in new printing plant design and equipment in a single-floor, continuous straight-line operation.

Robinson Tag and Label Co., with headquarters in New York City, will become executive headquarters for administration, sales and design, while Rotag will act solely as a manufacturing division.

One of the nation's largest tag and label manufacturers, Robinson also owns Dixie Tag and Envelope Co. of Charlotte, N. C., maker of factory, systems and manifold tags; and Joseph J. Stone Co. in Greensboro, N. C., producer of all types of advertising and informative merchandising tags.

Hermetite Acquired by Universal Match

The acquisition by Universal Match Corp. of the Hermetite Corp. of Carlstadt, N. J., has been approved by both firm's board of directors.

Joint announcement of the acquisition was made by John L. Wilson, president of Universal Match, and E. H. Oliver, president of Hermetite.

The price was not disclosed. Universal Match will acquire the business and all assets of Hermetite in exchange for Universal Match common stock.

Hermetite, with plants in New Jersey and Virginia, is engaged in the laminating and coating of paper, including especially processed paper for use by the tobacco industry as a wrapper for the filter portion of filter-tip cigarettes.

Mr. Wilson said the present management and personnel of Hermetite will be retained, and the company will become a wholly owned subsidiary of Universal Match.

D-N Announces Changes In Molded Packaging Div.

Diamond National Corp. has made five changes in the management of its Molded-Package Division.

Eric G. Erickson has been promoted to general sales manager for disposable plates and "Foodtainer" trays. He is a divisional vice president and had been director of manufacturing for the division.

George S. Wolf has been promoted to divisional vice president and to general sales manager for egg packaging. He had been eastern area sales manager for egg-packaging products.

John J. Penn was named director of manufacturing for the division; he had been assistant director. Donald A. Hunter was promoted to assistant director of manufacturing. James L. Horton succeeds Mr. Hunter as manager of Diamond's plant at Red Bluff, Calif.

Simplex Paper to Build Plant in Crossett

The Simplex Paper Corp., which operates plants in Adrian, Mich., and in Palmyra, has announced a new $1 million plant at Crossett, Ark.

Floyd M. Murphey, Jr., president, said the plant will process paperboard milk bottle cartons. Simplex already has another plant at Crossett.

Paper Package Elects Grebe Vice President

Edward H. Grebe has been elected vice-president of Paper Package Co. He will be in charge of the company's newly created planning and facilities division.

Mr. Grebe, who has been with Paper Package Co. for the last 36 years, was, prior to his election, treasurer of the company and head of the financial division. He will be in charge of production planning, purchasing and material control, and production engineering.

Paper Package Co. is an operating division of Creative Packaging, Inc.

Cupples-Hesse Co. Changes Name

Cupples-Hesse Co. changed its name on May 1 to Cupples-Hesse Envelope Co. to reflect the primary product of the firm, Norbert L. Harms, president announced. The company is a division of the St. Regis Paper Co., New York City.

Columbia Paper Products Advances Hallman

Robert E. Hallman has been promoted to vice president and general manager of the Baltimore and Tampa plants of Columbia Paper Products Corp.

A native of Baltimore, Mr. Hallman is a graduate of McDonogh School and Babson Institute. He joined Columbia approximately 10 years ago, advancing to general manager of the Tampa operation recently. Mr. Hallman will continue his residence in Tampa, Fla.

Also announced was the promotion of Walter A. Geiger, Jr., to assistant secretary and assistant treasurer of the two plants.

Alton Box Board to Build Plant in Tenn.

Negotiations have been completed with Marvin W. Swaim, president of Alton Box Board Co. of Alton, Ill., to build a new plant in Humboldt, Tenn. The company will manufacture corrugated board and corrugated boxes. The proposed factory building will cover about 125,000 square feet and employ a maximum of 250 workers.

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Air Knife
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For example, just recently a record was established in a paper-board mill in Delaware. A rugged Albany Pulp Felt on the Second Press of a Fourdrinier Machine making 9 point helped run up an all-time tonnage record for this machine of 80 tons per day!

25% SYNTHETICS

This felt was constructed in a special Albany Felt Design with 25% synthetic content. Used on the reverse second press with a brass top roll and rubber-covered bottom roll, it provided trouble-free operation from the minute it was installed. Furthermore . . .

IT BROKE ALL RECORDS FOR LONG LIFE-16 days!

Just another example of how Albany Felt Company's careful attention to proper felt design, correct blending of fibers and close tolerances in manufacture pay-off in improved felt performance. This applies to other applications, too-fine papers, tissue grades and high-finish paperboard.

ASK YOUR ALBANY FELT SALES ENGINEER about a special presentation of these informative, full-color film strips: "Felt Manufacture" and "Felt Applications." He will be glad to arrange a showing at your convenience.

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Bleached Gw'd.	97.50/100.00	97.50/100.00			
Kraft, Blchd.	‡140.00/150.00	‡140.00/150.00	150.00/ —	150.00/ —	150.00/ —
Kraft, Blchd. Hdwd.	135.00/140.00		140.00/ —		
Kraft, Semi-bleached.	130.00/140.00				
Kraft, Unbl.	117.50/125.00	125.00/ —	125.00/130.00	125.00/ —	
Sulphite, Blchd.	‡135.00/140.00	‡135.00/140.00	140.00/ —	140.00/ —	140.00/ —
Sulphite, Bl. Hdwd.	135.00/ —				
Sulphite, Unblchd.	125.00/ —	125.00/ —	125.00/ —	125.00/ —	125.00/ —
Sulphite, Unb'l. Gl'sn		140.00/ —	134.00/ —		
Soda, Blchd.	130.00/135.00	130.00/135.00			

‡ Depending on Brightness.

COTTON LINTERS

F.O.B. OIL MILLS PER CWT
WEEK ENDED MAY 16

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	8.00/7.50
3	$7.50/7.00	$7.50/7.25	$7.50/7.00	7.25/6.75
4	7.00/6.25	6.50/6.25	6.50/6.25	6.50/6.25
5	6.25/5.75	6.00/5.25	6.00/5.50	5.75/5.50
6	5.75/4.75	5.50/5.25	5.25/5.00	4.50/4.25
7	4.75/4.25	4.75/4.50	4.75/4.00	n.a.

WASTE PAPER MARKET

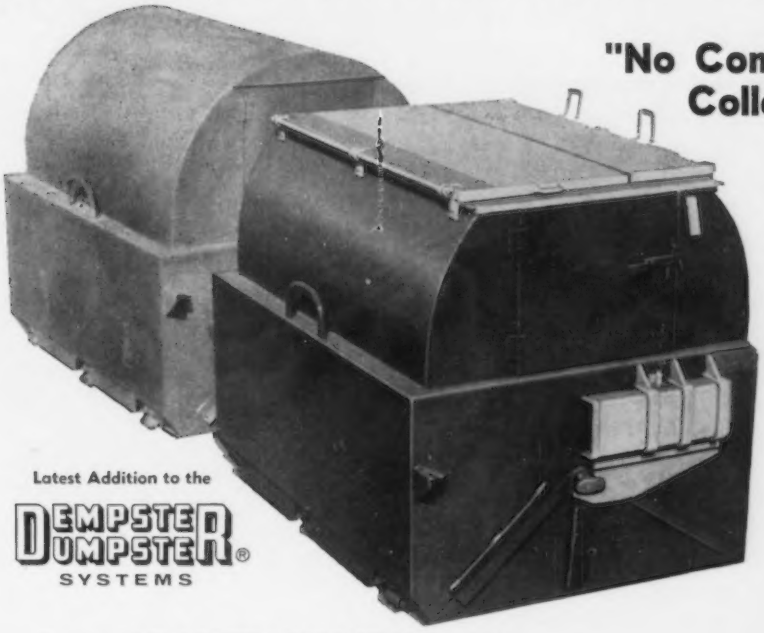
Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	May 22	May 22	May	May
No. 1 Mixed Paper	$ 7.00/ 9.00	4.00/ 7.00	6.00/ —	12.00/ —
No. 1 News	12.00/ 13.00	11.00/ —	11.00/ —	16.00/ —
Overissue News (Lg. size)	11.00/ 13.00	9.00/ 11.00	16.00/ —	18.00/ —
Mill Wrappers	19.00/ 22.00	9.00/ 11.00	9.00/ —	13.00/ —
Old Corrugated Containers	17.00/ 18.00	15.00/ 15.50	18.00/ —	16.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	28.00/ —	50.00/ —
New Double Kr. Ld. Corr. Cuts	27.50/ 30.00	30.00/ 32.50	30.00/ —	27.50/ —
(Semi-chem. medium)	45.00/ —	42.50/ —	42.50/ —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	52.50/ —	— / —
New Br. Kraft, Env. Cuts	65.00/ 70.00	65.00/ 70.00	47.50/ —	45.00/ —
New Br. Kr. Bag Waste Prntd.	50.00/ 55.00	50.00/ 60.00	47.50/ —	35.00/ —
New Br. Kr. Bag Waste Unprintd.	55.00/ 60.00	60.00/ 65.00	55.00/ —	42.50/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	20.00/ 25.00	10.00/ —	27.50/ 30.00
White Newsblanks	42.50/ 45.00	35.00/ 40.00	30.00/ —	55.00/ —
No. 1 Soft White Shvs.	55.00/ 60.00	55.00/ 60.00	50.00/ —	75.00/ —
Super Soft White Shvs.	65.00/ 75.00	70.00/ 80.00	60.00/ —	— / —
Hd. White Shvs.	75.00/ 80.00	80.00/ 90.00	75.00/ —	80.00/ —
Hd. White Env. Cuts	90.00/ 95.00	100.00/105.00	80.00/ —	103.00/ —
Col. Tab. Cards	40.00/ 42.50	40.00/ 42.50	40.00/ —	35.00/ —
Manila Tab. Cards	57.50/ 60.00	55.00/ 60.00	60.00/ —	65.00/ —
No. 1 Col. Ledger	32.50/ 35.00	30.00/ 35.00	35.00/ —	18.00/ —
White Ledger	45.00/ 50.00	42.00/ 47.00	45.00/ —	40.00/ —
Mixed Book & Mag.†	— / —	— / —	8.00/ —	— / —
No. 1 Books‡	15.00/ 17.50	18.00/ 22.00	22.50/ —	8.00/ —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

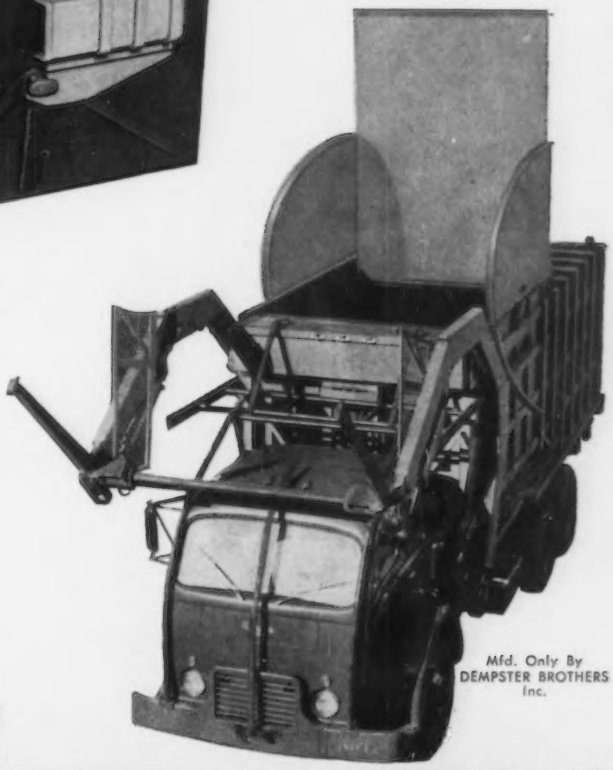
New SUPER DUMPMASTER Handles Converted DUMPSTER Containers...Beats Long-Haul Problem



Latest Addition to the
DEMPSTER DUMPSTER® SYSTEMS

"No Container Haul System" Collects Refuse on Spot

If longer trips to disposal areas have raised your operating costs, a small investment in conversion kits protects large investments in DUMPSTER containers. The Super DUMPMASTER handles converted DUMPSTER containers up to 12 cu. yd. and all DUMPMASTER containers one thru 12 cu. yd.



Mfd. Only By DEMPSTER BROTHERS Inc.

Owners of DEMPSTER-DUMPSTER Systems who now face long haul problems due to movement of disposal areas may now convert from their present "container haul" system to the new SUPER DUMPMASTER "no-container-haul" system without abandoning their investment in DUMPSTER Containers.

The SUPER DUMPMASTER makes its rounds to each converted container, mechanically empties the contents into its 30 cu. yd. packer body and compacts the material to a fraction of its former volume with the 85,000 lb. force of its packer plate. Rather than haul each container to the disposal area, the SUPER DUMPMASTER carries the contents of many containers on each trip, cutting collection costs drastically.

Write Today for FREE BROCHURE

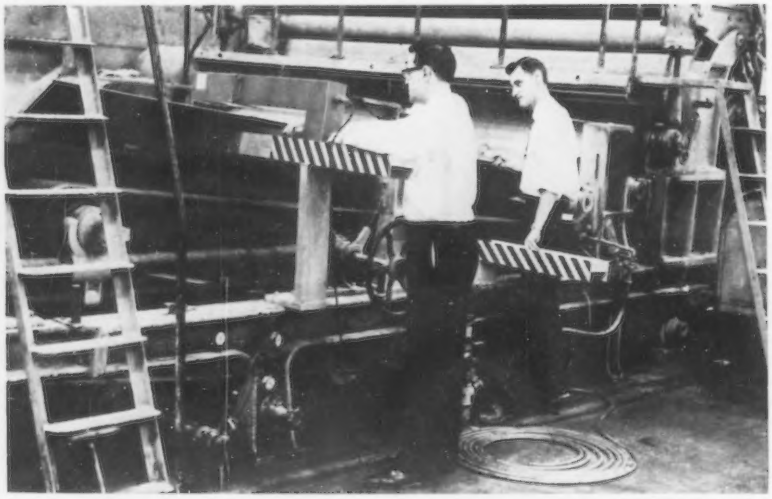
DEMPSTER BROTHERS Inc.
DEPT. PJ-5, KNOXVILLE 17, TENN.

The SUPER DUMPMASTER engages container.

Clearance arms carry it toward hopper opening.

Container is rotated, emptying contents into the compaction body.

PTJ NEWS OF SUPPLIERS



HUYCK'S William Welch (left) using Huyck's Beta Ray Gauge and Don Baade using Huyck's Measuring Wheel to check press water removal efficiency.

Huyck Felt Co. has announced the establishment of a new type of service for the paper industry. This involves the location of a research and development office in the Portland, Ore., area. The purposes of this Huyck program are to study the various phases of felt and press operation, the factors influencing sheet finish, size, stability, water removal and the felt's ability to "couch" or pick up. Emphasis is also placed on the felt as a sheet conveyor and power transmission belt. This field effort is supported by a team of scientists, engineers and consultants working in Huyck's Science Center, located in the Rensselaer, New York, plant.

After the collection of data on the fluid dynamics of press operations, an analysis will be made detailing preferred changes in felts and press section particulars. Recommendations for machine adjustments will then be made.

Huyck Felt has assigned two resident engineers to the Portland, Ore., area. J. William Welch has been appointed senior resident engineer, and will be assisted by Donald Baade, junior resident engineer. This new research and development program, will be offered as a supplement to the regular services now provided by Huyck's regional sales manager, Roy W. Keller and field service engineer, Robert D. Baer.

Mr. Welch is a chemical engineering graduate from Yale University. Prior to joining Huyck, he was employed as a process design engineer for the Esso Standard Oil Co. More recently, he was employed by the Lee Paper Co. as head of research and development.

Mr. Baade received a degree in chemical engineering from the University of Maine. Following his graduation he did graduate work in pulp and paper technology in connection with the TAPPI project on pulp stock hydraulics. He previously worked as a control engineer for Anglo Newfoundland Development Co.

Air Reduction Chemical & Carbide Co., has officially opened new chemical manufacturing and distribution facilities at City of Industry, Los Angeles County, Calif.

The plant, which began operating at the beginning of the month, is devoted to resin polymerization and produces Flexbond and Vinac resins. Used in the formulation of paints, adhesives and paper coatings, Flexbond copolymer emulsions and Vinac polyvinyl acetate emulsions, beads, and powders are marketed by the Colton Polymers department of Air Reduction Chemical & Carbide Co.

Facilities on the eight-acre tract include a sales office, warehouse and a technical service laboratory. The sales office is under the direction of Robert C. Gilardi, Western district manager for the Colton Polymers dedepartment. The technical service laboratory is under the supervision of W. D. Meadows. Manufacturing and warehousing are managed by J. A. Saner.

Dodge Manufacturing Corp., Mishawaka, Ind., has appointed John M. Macy assistant to David M. Firth, vice president in charge of engineering. In his new position Mr. Macy will help direct an extensive program of developmental and experimental engineering in connection with the manufacture of mechanical power transmission equipment.

American-Marietta Co., Seattle, Wash., has announced the appointment of John S. Nelson as sales representative for A-M products used by the paper industry in the Wisconsin area.

For the past 15 years Mr. Nelson has sold plywood adhesives for American-Marietta on the West Coast. He will reside in Appleton, Wis.

O. S. Trigg

C. A. Raby

Virginia Chemicals & Smelting Co., has announced that O. Scott Trigg had joined the company's Chemical Sales Department as district sales representative. Mr. Trigg will cover the South Central States and make his headquarters in Memphis, Tenn.

J. M. Huber Corp., New York, has named Claude A. Raby divisional manager for sales of paper clays and pigments.

Mr. Raby, who has served as assistant divisional manager since April 1, 1956, succeeds Robert J. Casey who has resigned. Mr. Raby will have sales headquarters at 630 Third Avenue, New York City.

Mr. Raby joined Huber in 1949 and served as technical sales rep-

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Twenty-seven valued articles all together . . . each written by an authority . . . offering solutions to various problems faced by the Industry's Orphan —FINISHING . . . comprising the initial phases of PAPER TRADE JOURNAL's exclusive "Operation Finishing." Order your personal copy TODAY! Price, only . . . $2.50 per copy

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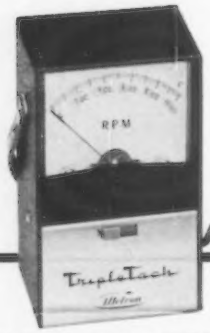

NEW from Metron

A LIGHT BUT RUGGED HAND TACHOMETER

Here are the features you asked for in Metron's new TRIPLETACH:

CONSTANT ACCURACY—± 1% full scale
THREE RANGES—changed with a flick of the switch
FOOL-PROOF READINGS—only the scale in use is visible
COMPACT SIZE—3½"x5⅝"x2½"; fits your toolbox
LIGHTWEIGHT—only 24 oz.
HANDY CASE—carry all accessories with you
VERSATILE—reads directly: shaft speeds in RPM; belt speeds in ft./min. or in./min.
ONE ROTATING PART—ball bearing-mounted; permanently lubricated.
Send today for Bulletin 103A and ordering information. Delivery: one week.

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Do It Yourself!

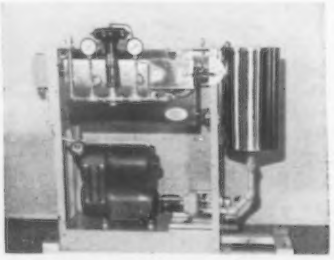
PROCESS YOUR STARCH SLURRIES TO SUIT YOUR INDIVIDUAL NEEDS—

LARGE USERS OF STARCH HAVE FOUND THIS EASY TO OPERATE COOKER A VALUABLE TOOL IN LABORATORY AND MILL.

WILL COOK THE NOW POPULAR HIGH TEMPERATURE STARCHES.

YOUR TECHNICAL MEN HAVE **IDEAS** — THIS IS THE TOOL TO DEVELOP NEW AND BETTER - - -

COOKED STARCHES



Continuous Starch Cooker

Thermal Equipment Corporation
8019 MONTICELLO AVENUE
ORchard 5-5254 SKOKIE, ILLINOIS

resentative. From 1952 to 1956 he headed the Huber office in Chicago and later transferred to New York. He graduated from the University of New Hampshire in 1948 with a degree in chemical engineering.

Allis-Chalmers Mfg. Co. has appointed Kenneth R. Geist general manager of the newly formed Special Products Department.

In this capacity Mr. Geist will develop new businesses for the company. Products, materials and processes which will be handled by this department will come principally from the Allis-Chalmers Central Research Division and from the firm's other research and development centers.

K. J. Nolan

E. P. Nalley

Harris-Seybold division, Harris-Intertype Corp., has promoted Kenneth J. Nolan and E. P. Nalley to the newly created posts of eastern and western sales managers respectively.

The new regional alignment was created because of the increased sales and new product developments in the company.

Prior to his promotion Mr. Nalley was the assistant general sales manager for Harris. He has been with the company 13 years and has been southern district manager (Atlanta) as well as a sales representative in other districts.

Mr. Nolan was New York district manager prior to his promotion to eastern sales manager. He has been with the company for 12 years and has spent his career in the eastern regions which he now manages.

Extremultus, Inc., has completed a move to a larger new plant at 130 Coolidge Avenue, Englewood, N. J., in order to meet increased demands for its new-type power transmission belting.

A major supplier of belting for a wide range of industry since 1956, the company has imported its scientifically developed product line from Western Germany. With the opening of the Englewood plant, Extremultus will begin manufacture of its belting in the United States.

THIS IS FIBRENIER

NOW IN PRODUCTION AT THE NEWEST KRAFT MILL IN NORTH AMERICA

A new Kraft mill at Woodfibre, British Columbia, is on stream! Specifically designed to produce great paper-making pulps, competitively priced, Woodfibre is now turning out FIBRENIER —first of a new family of advanced pulps that offer the papermaker important new opportunities for strength, brightness, formation, opacity and smoothness.

FIBRENIER is an all-new blend of western red cedar (for Mullen, tensile and fold . . . plus opacity and surface smoothness); Douglas fir (for exceptional tear strength); western hemlock (for high freeness and balanced strength properties)—another achievement of Rayonier Research.

See for yourself just how great FIBRENIER is. Call your Rayonier representative collect today. Samples and tonnage quantities are ready. Or write for complete data. No obligation.

RAYONIER

GREAT PAPER-MAKING PULPS

Rayonier Incorporated
161 East 42nd Street
New York 17, New York

For The World's Leading Papermakers — The Complete Line of Fibers • Bleached sulfates: western softwood, western red cedar, southern pine and southern hardwood. Bleached sulfites: western hemlock, southern pine.

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Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Apr. 15	Apr. 22	Apr. 29	May 6	May 13
1961	93.3r	92.3r	90.2r	91.7	90.6
	Apr. 16	Apr. 23	Apr. 30	May 7	May 14
1960	97.2	94.4	99.4	97.3	98.5

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	96.5	97.7	98.1	96.9	97.6	96.1	81.2	91.7	89.1	94.8	92.0	80.2	92.7
1961	87.9	90.0	91.2	90.7‡									

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1954	1955	1956	1957	1958	1959	1960	1961
Year to Date	93.8	96.9	101.5	95.2	88.5	91.9	97.4	90.1
Year Average	91.6	96.2	97.9	90.4	87.0	92.2	92.7	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Apr. 15	Apr. 22	Apr. 29	May 6	May 13
1961	93	92	91	93	92
	Apr. 16	Apr. 23	Apr. 30	May 7	May 14
1960	95	86	92	93	94

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	92	95	94	93	94	92	78	94	88	93	86	73	89
1961	88	89	91	91									

† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	WEEK ENDING May 6, 1961	WEEK ENDING May 13, 1961	CUMULATIVE TO DATE Jan. 1, 1969 to May 13, 1961
% Activity	93%	92%	90%
Total	325,861	319,615	5,829,014
Containerboard—Domestic Use	163,799	165,197	2,941,397
Liner	106,989	112,437	1,952,820
Corrugating Material	51,415	47,904	895,660
Chip & Filler Board	5,425	4,856	92,917
Boxboard—Domestic Use	103,998	98,673	1,835,592
Folding	60,829	56,657	1,081,515
Set-Up	10,468	9,366	178,811
Special Food Board	32,701	32,650	575,266
Other Paperboard	58,064	55,745	1,052,025
Containerboard Type	27,120	23,788	500,204
Boxboard Type	30,944	31,957	551,821
Total Orders			
Received	371,060	308,698	
Unfilled End of Week	466,293	456,332	

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SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	WEEK ENDING May 6, 1961	WEEK ENDING May 13, 1961	CUMULATIVE TO DATE Jan. 1, 1969 to May 13, 1961
% Activity	93%	92%	90%
Total	325,861	319,615	5,829,014
Containerboard—Domestic Use	163,799	165,197	2,941,397
Liner	106,989	112,437	1,952,820
Corrugating Material	51,415	47,904	895,660
Chip & Filler Board	5,425	4,856	92,917
Boxboard—Domestic Use	103,998	98,673	1,835,592
Folding	60,829	56,657	1,081,515
Set-Up	10,468	9,366	178,811
Special Food Board	32,701	32,650	575,266
Other Paperboard	58,064	55,745	1,052,025
Containerboard Type	27,120	23,788	500,204
Boxboard Type	30,944	31,957	551,821
Total Orders			
Received	371,060	308,698	
Unfilled End of Week	466,293	456,332	

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1—42" 3-color flexo—3 mos. old
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1—62" 10-11A
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1—52", 10 S-A
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1—50" 28-3D Duplex

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1—82" & 1—92" "BA" Langstons
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	56"-Dayton	44"-Dexter
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2—PO2 Roto Bag Machines
2—Bagprint B-10 F&S Bag machine
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1—Hansel Bag Machine—3 color printer
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1—Multipath Bag Machine — 4 Color Holweg Printer
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1—Model 4 Potdevin Sack Machine

MISCELLANEOUS MACHINES

1—36" Beck CSH L/boy—E/eye
1—45" CCSH Beck Sheeter ready for E/eye
1—36" CCSH Beck Sheeter with E/eye
1—90" M&W Sheeter O/lapping del. & Layboy
5—Hamblets 100-72-64-60" w/layboy
1—84" Hamblet Duplex Heavy Board Sheeter
1—78" M&W sheeter & layboy—rebuilt
1—42" Reverse Roll Coater
2—38" x 24" 4-Post Seybold Die Presses
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1—104" B-C 8 roll
1—115" B-C 7 roll
1—124" Downingtown 5 roll
1—124" Downingtown 6 roll

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1— 96" Murray 6 knife; A-F Brng

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1— 24" Waldron Coater & Embosser
1— 60" Egan Air Knife—New 1956
2— 65" & 76" Mayers

COMPLETE PAPER & BOARD MACHINES

3—Sandy Hill 81" trim single cyl. Tissue
1—M & W 72" Trim Fourdrinier paper machine
1—B-C 100" 7 cyl. Board Machine Complete
1—M & W 72" Trim Yankee Fourdrinier
1—Rice Barton 84" Fourdrinier

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1—104" face x 36" dia
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8—124" face x 36" dia w/rubber couches

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1—114" 7 cyl. Wet End, complete
1—124" 7 cyl. Wet End, complete

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17—25-75 h.p.—complete with clutches & cone pulleys
38—1 h.p.-125 h.p. parallel gear boxes

DRYERS—HYDROSTATICALLY TESTED

24" Dia.:
37—46" face; Chrome plated
1—156" face w/gear and steam joint

28" Dia.:
3— 70" face w/gears & bearings
3— 73" face w/gears & bearings
6— 76" face w/gears & bearings
4—84" face w/accessories

36" Dia.:
1— 42" face
2— 44" face; 2—46" face
3— 70" face w/gears & bearings
11— 72" face w/gears & bearings
1— 74" face Lukenweld w/A-F Brng
8— 75" face w/gears & bearings
26— 76" face; complete section
9— 76" face w/gears & bearings
2— 77" face w/gears & bearings
1— 78" face w/gears & bearings
2— 80" face
5— 84" face
11— 84" face; complete section
7— 94" face; complete section
1— 96" face
1—138" face
10—160" face

42" Dia.:
23— 73; 74; 76" face; complete section
46— 96" face w/gears, frames & bearings
1—120" face
1—160" face

48" Dia.:
49— 46" face; chrome plated
12— 82" face; complete section
3— 84" face
7— 94" face
1— 96" face
12— 98" face—complete section
19—106" face w/gears & bearings
6—110" face w/gears & bearings
10—123" face w/gears, frames & bearings
1—128" face

EMBOSSERS

1— 80" Hudson Sharp; A-F Brng
2— 62" Textile Machinery Co., w/drives

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1—New Bird—218" Max. cleaning area

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JORDANS

2—Appleton #1 w/A-F Brng
1—Horne w/A-F Brngs
4—Shartle Miami #2 w/A-F Brngs
1—E. D. Jones #4 Imperial A.F. Brng.

LAYBOYS

1—Hamblet 124"—gear motor operated
1—Hamblet 88"—gear motor operated
1—Beck 65" w/auto lowering device

MOTORS 3 PH 60 CYCLE

1—100 h.p. GE; 440 v; 695 r.p.m.
1—300 h.p. West; 2200 v; 503 r.p.m.
1—350 h.p. GE; 2200 v; 720 r.p.m.: Synch

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1—De Laval 100 h.p. steam turbine w/reducers

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1—Lannoye #1 Pulper
1—Murray 2 deck Chip Screen, 5 ft x 14 ft.

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1—Shartle 8 x 18 Duplex

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1—109" two bowl upright
1—123" Beloit—2 bowl
1—126" Beloit Aldrich surface drive type
1—146" B & S pope type w/Reliance drive

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2—#1 Claffin; A-F Brng
1—24" Downingtown Weiner; new
2—36" Bauer, Model 185 w/2—75 h.p. motors
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1—Dilts #4 Hydrafiner—AF Brng.
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1—124" x 30" Farrel w/crowning device
1—208" x 32" Farrel w/crowning device

ROTARY SCREENS

5—Bird #3A, Model 100 w/copper vats
1—Jones Leithwalk copper lined

SHEETERS—ROTARY KNIFE

2— 45" Beck w/Jogger
6— 56", 60", 66" & 70" Hamblets
1— 65" Kidder w/elec. eye and layboy
3—72" Hamblet w/M&W Layboy
1— 76" Beloit Duplex
1— 82" Hamblet
2—82" Hamblet w/overlapping M&W Layboy
1— 85" Hamblet duplex w/layboy
1— 88" Hamblet single knife; AF brngs; w/motor operated layboy & 10 roll Stevens back stand.
1— 88" Hamblet Duplex w/motor oper. layboy and 4 roll back stand.
1—105" Hamblet
1—112" Beloit Duplex Board Cutter; A-F Brng

SLITTERS & REWINDERS

17¾" Maximum Rewind Diameter
2—26" Cameron Type 24.
2— 42" Cameron Type 26-2A

24" Maximum Rewind Diameter
2— 42" Cameron Type 6
1— 42" Cameron Type 6 Shear Cut
1— 62" Cameron Type 6
1— 72" Cameron Type 9-5

30" Maximum Rewind Diameter
1— 52" Cameron Type 10; A-F Brng.
1— 60" Langston Shear Cut

36" Maximum Rewind Diameter
1— 72" Cameron Model 8-10

42" Maximum Rewind Diameter
1— 40" Egan Shear Cut; A-F Brng
1— 60" Kidder Model SH Low Bed
1— 72" Beloit Shear Cut
1—136" Cameron Type 18; A-F Brng
1—161" Cameron Type 18 w/60 h.p. Reliance VS Drive

48" Maximum Rewind Diameter
1— 86" M & W Four Drum Shear Cut
1—152" Langston Shear Cut

60" Maximum Rewind Diameter
1—112" Cameron Type 18
1—120" M & W two drum w/75 h.p. drive
1—120" Langston
1—136" Langston; AF Brng; shear cut

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18" Maximum Rewind Diameter
1—62" Cameron 26-7D, equipped with air knives—film or cellophane

30" Maximum Rewind Diameter
1—42" Essex Shear Cut; A-F Brng

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2—1000 g.p.m. Shartle Hydrafuges w/motors
14—Bird Dirtecs; 2" & 6" bronze
1—Bird Dirtec 12". Rebuilt by Bird
21—4" Vortraps—Bronze

STOCK REGULATORS

2—Braemer SS; 25 t/d cap; Foxboro controls
2—Poirier; 25T/D cap

SUCTION COUCH ROLLS

1—125" face x 18" dia—bronze brng
1—144" face x 30" dia—roller brng

SUCTION EXTRACTOR ROLLS—DOWNINGTOWN

1—126" face x 22" dia; complete section
1—134" face x 18" dia.; A-F Brng

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1—114" face x 20¼" dia. R. C. Complete section
1—120" face x 18" dia—R.C.—Roller brng
1—126" face x 24" dia. R.C.; A-F Brngs.

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2—30" Norwood 4 roll
1—53" Norwood, 13 roll, glassine; A-F Brngs
2—63" Norwood 8 roll; A-F Brng
1—92" Norwood 7 roll w/drive

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1—Hudson Sharp 50", single fold—towel
1—Paper Converting single fold—towel

THICKENERS

1—Shartle—Cylinder 131" x 36"—16" Couch
1—Shartle—Cylinder 36" dia. x 72" face

TRIMMERS—POWER BACK GAUGES

1—50" Seybold Twentieth Century
1—65" Seybold Dayton
3—84" Seybold Daytons
1—Challenge 34" w/motor

UNWIND STANDS—CONSTANT TENSION

1—34" Cameron Type CT—Electric Eye
1—72" Cameron—w/c brake—air operated
1—82" Cameron—w/c brake—air operated

VACUUM PUMPS

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5—#2, #4, & #7 Nash Hytors
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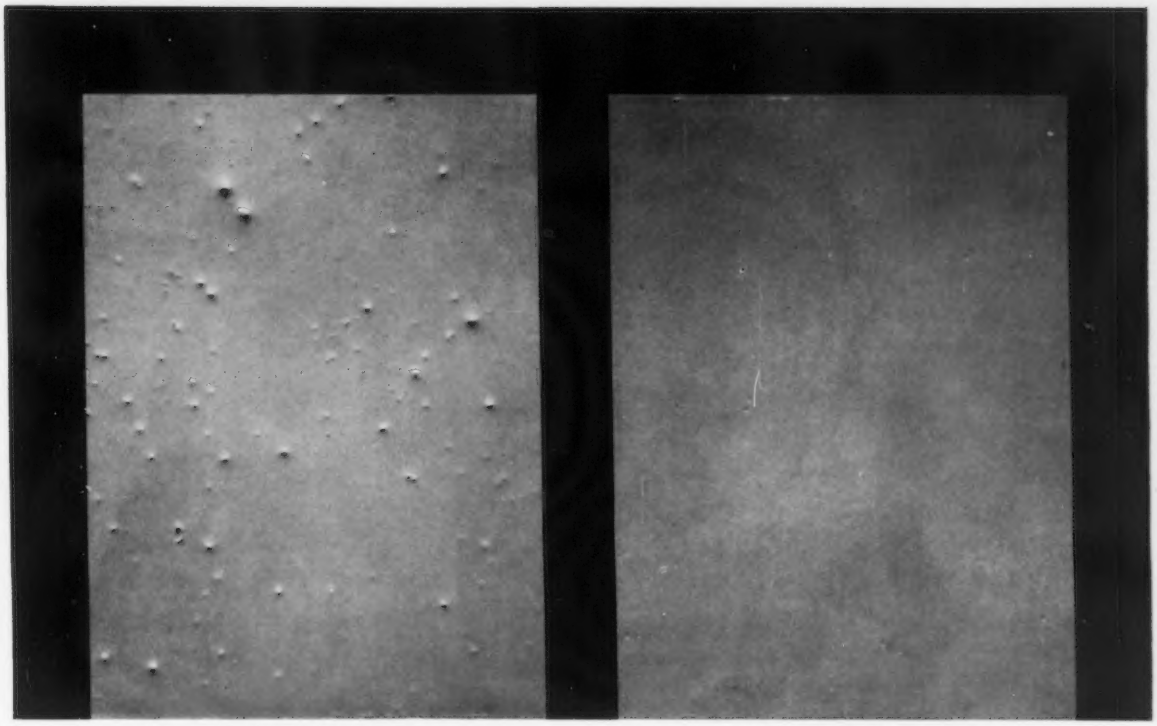

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